Unity within Diverse Multiplicity: Masonry, Method, and Analogy in Byzantine Architecture

Doctoral Thesis

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Supervised by Prof. Gordana Fontana Giusti, and Prof. Jeremy Carrette at the University of Kent, Canterbury

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TABLE OF CONTENTS:

Abstract

Foreward

Acknowledgements

Contents

Chapter 1: Introduction to the Question of Theology in Architecture and Hagia Sophia, Thessaloniki, as a case study.

Chapter 2: The Conceptual Hagia Sophia.

Chapter 3: The Eucharist Liturgy and Masonry Analogies in Hagia Sophia, Thessaloniki.

Chapter 4: Iconography and its Relationship to the Case Study church of Hagia Sophia, Thessaloniki.

Chapter 5: Masonry Analogies and Methods in the Construction of Hagia Sophia, Thessaloniki

Chapter 6: Concluding remarks on this research, its discoveries and potential direction beyond this thesis.

Bibliography

Glossary of Terms

Appendices

ABSTRACT:

Architecture is a mute medium. It presents neither pictures nor words. Its power is as a medium in which the whole human body is immersed. We spend almost all our time in buildings, yet in everyday life we are usually unconscious of its continuous communication through its forms and materials.

This research proposes that load-bearing masonry architecture offers an experience of theology to its builders and visitors. Yet how can one prove this if historical mason-builders never wrote this down? How can one show that building could be a theological medium with a contemplation as potent as any rosary and a mystagogy as valid as any pilgrimage, in harmony with the natural world, and a journey to divine unity? This thesis focuses on the masonry church of Hagia Sophia, Thessaloniki by comparing the three categories of ritual, iconography, and masonry architecture. It is a unique example of a Byzantine cross-domed church, since it still retains its essential iconography, and in it the early Christian liturgies continue to be celebrated.

Primary theological texts from Dionysios the (pseudo) Areopagite to Maximos the Confessor, as well as 6th century literary *ekphraseis* (eulogies) to other Hagia Sophias, guide this work of comparison and translation. In methodology, two modern philosophers are referenced, Michel Foucault and Gaston Bachelard, to illustrate aspects of the above theologians's work for the contemporary reader.

This thesis translates between these three categories using *theoria* (theory) and *mystagogia*, (mystagogy) seeking to infer a masons' guided (mystagogic) method, whereby an intangible, timeless metaphysics could be communicated by the material architecture. This exercise in translation from one medium of expression to another, and from one category of knowledge to another, begins to uncover a language of architectural theory that harmonizes a sense of 'unity within diverse multiplicity' with the material environment. The methodology puts the focus on hands-on experience which could be transferrable to modern masonry and even sustainable technologies, as healing for the individual and the community.

Keywords: #Architecture #Ontology #Poetics #Byzantine #Masonry #Mysticism #Analogy

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1.0 INTRODUCTION

Introduction to the Question of Theology in Architecture and Hagia Sophia, Thessaloniki, as a case study.

Towards a Theological Architecture.

In this thesis I aim to show that architecture communicates theology. The primary aspects of theology on which I aim to focus, are the relationship between God and creation, and how a person remembers God through creation. In relation to theology, this thesis is written within the scope of a definition of God as a single, unitary essence which creates the world of its own free will, which is beyond yet within the world, and can be known in a personal way. In relation to architecture I aim to research how the remembrance of God could relate to architecture's materials and forms, and to the method of shaping these by human hands into an environment which can be inhabited. For this research I have chosen masonry architecture within Christian theology.

The 'unity within diverse multiplicity' in the title of this thesis, is what a theologian would read as God within creation. To an architect this can be notated as the spatial figure of a centre point within a circle, but for that unity to be remembered there must be the human experience. 'Consequently theology must be not so much a quest of positive notions about the divine being as an experience which surpasses all understanding.'[1] In this thesis the possibility of a theological architecture, between its materiality and that essential unity who is 'beyond all', is explored through the Method of masonry construction as *mystagogia*, and through Analogy as *theoria*.[2] These are referenced in the whole title, 'Unity within diverse multiplicity: masonry, method and analogy in Byzantine architecture'. Method and Analogy are distinct but not separated in this thesis, much as *theoria* and *mystagogia* were not separated by the early Christian theologians. In general, the direction to which theology is oriented is *henosis* or *theosis* of the person as it was called in the Hellenistic East.[3] This research is simply

1. Lossky (2005, p. 35)

2. See Glossary for *mystagogia* and *theoria*.

3. See Glossary for *theosis*. According to Uzdavinys (2004) in '*The Golden Chain: an anthology of Pythagorean and Platonic philosophy': 'In the original Orphico-Pythagorean sense, philosophy meant wisdom (sophia) and love (eros) combined in a moral and intellectual purification in order to reach the "likeness of God" (homoiosis theo) [Plato, Theat. 176b])"'* (2004, loc. 158 of 7731) Also, '*Thus, by "philosophizing" was meant both noetic activity and spiritual practice; and this was attributed not only to various Hellenic philosophers who belonged to different haireseis (schools or theoretically founded ways of life), but also to the Egyptian priests, Chaldeans, and Indian Gymnosophists.'* (2004, loc. 2013 of 7731)

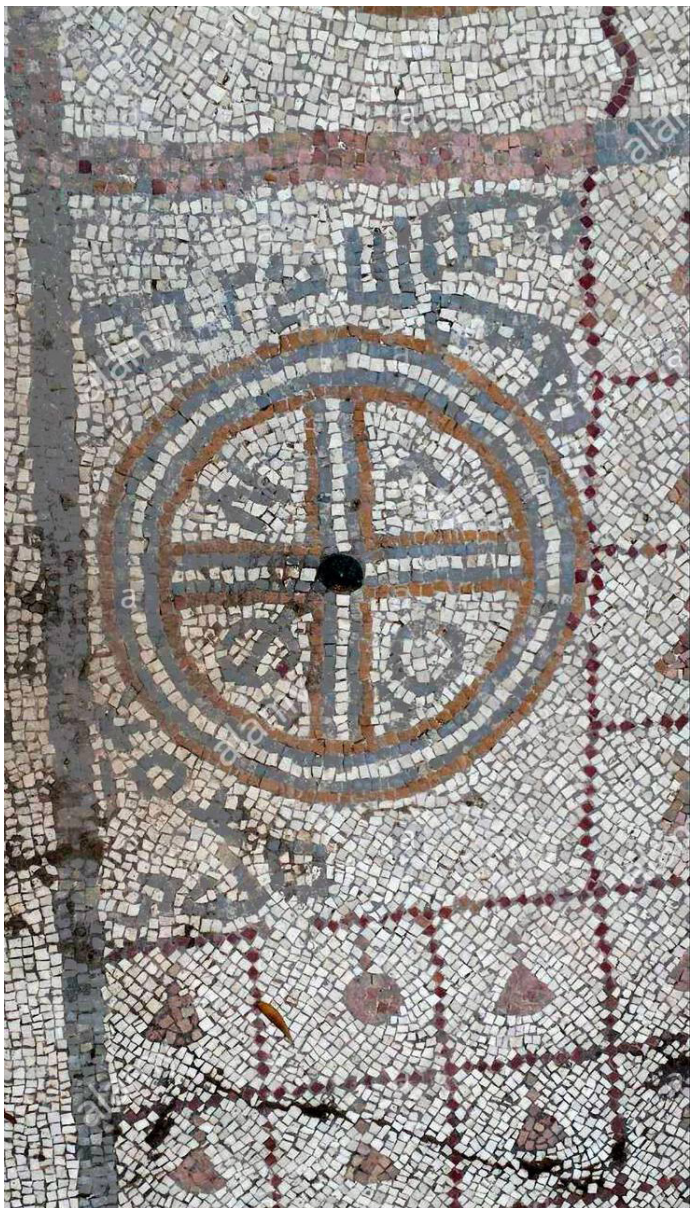


FIG. 1 Above left: Aramaic inscription from a Byzantine church mosaic floor dating circa 6th century AD, Western Galilee.

Available from: https://c8.alamy.com/comp/2B2GB6T/6630-aramaic-inscription-from-a-byzantine-church-mosaic-floor-dating-c-6th-c-ad-western-galilee-2B2GB6T.jpg [Accessed: 6 September 2020]



FIG. 2 Below left: 4th century Roman sarcophagus with "Chi-Ro" bas-relief.

Available from: https://live.staticflickr.com/4081/35495353621_5426f2fd01_b.jpg [Accessed: 15 November, 2021]

done in the spirit of the love of wisdom, whereby *Sophia*, the wisdom of God, is its orientation.[4]

The relationship of architecture and theology is exemplified by the concept of the 'house of God'. In order to research Method and Analogy in masonry architecture, I have settled upon a case study 'House of God', the church of Hagia Sophia in Thessaloniki, built in the 7-8th century AD. It is one of the cross-domed churches which were evolving to replace basilican cathedrals in the eastern Roman empire during the transitional period (6th - 9th centuries). Unlike earlier domed martyria it did not enshrine a saint, nor was it a mausoleum or baptistry. By its name, Hagia Sophia, it inherits conceptual qualities as a cathedral of the people dedicated to the 'wisdom of God'.[5] But researching masonry architecture alone is almost impossible. There are virtually no texts describing either theory or a mystagogic method. Master masons of the past kept their knowledge secret until the line of masons died out.[6]

Given the disadvantage of this starting point, it seemed necessary to position the research in the context of a living liturgy and iconography, so that a *theoria* and *mystagogia* for the masons could be inferred from the context itself. For this reason, I have chosen to research this cross-domed case study church with a methodology that compares liturgy, iconography, and masonry architecture as three categories, each of which relate to the same theology. These three categories, masonry, liturgy, and iconography, can be experienced simultaneously and in person today in the church of Hagia Sophia, Thessaloniki.

Liturgy has always been connected to theology, and iconography's relationship with theology has been revisited in recent centuries. These two categories provide comparisons for understanding how its masonry architecture, which is an integral part of both the liturgical ritual and iconographic topology, could also embody theology. At the same time, it has been possible to reference several key texts in the original Greek and also in English translations, from the century before its construction, which connect theology to one or more of these

4. Pythagoras is reputed to have been the first to use the word philosophia since he could not claim to have attained wisdom (sophia) but he was simply a lover (philos) of wisdom. Wolfson refers to Plato's Phaedrus 278D, when he writes, *'Pythagoras, Socrates, and Plato maintain that God alone is wise (σοφός) but man can only be a lover of wisdom (φιλόσοφος)'*, (Wolfson 1962, p.23)

5. Justinian I built into Hagia Sophia, Constantinople (the Great Church) a conceptual programme which was part of the theological and ideological programme of his extensive building works throughout out the Roman empire.

6. Even today, stone masons undergo a strict apprenticeship in France with a level of secrecy sworn to their guild. After the European Middle Ages, that which became Freemasonry developed practices which seem to derive from masonry symbols, but whose methods are divorced from the experience of construction. I wish to make it clear at the start of this thesis that Freemasonry is not part of this research.

three categories, and sometimes to their relationships. Foremost among these are the works of Dionysios the (Pseudo) Areopagite (late 5th to early 6th century AD), the Mystagogia of Maximos the Confessor (c. 580 – 662) and the active liturgy of St. John Chrysostom originating in the 4th century.[7] Embodying the art of translation are the 6th century *ekphraseis* (eulogies) of Procopius and Paul the Silentiary describing Hagia Sophia in Constantinople, the Sougitha hymn in Aramaic to Hagia Sophia in Edessa, and the 10th century *ekphrasis* of Constantine of Rhodes' to the Holy Apostles church in Constantinople.

In this case study church, the categories of liturgy, iconography, and masonry architecture support each other in action, interpenetrate, and often merge within 5-8th century theology. For example, the *Mystagogia* of Maximos the Confessor makes a connection between the liturgical ritual and essential parts of the church architecture, using the same word *ekklisia* (church) for both the congregation and the building. Since his *Mystagogia* is a known reference for the *anagogy* (guided spiritual ascent) of liturgy and the symbolism of the *ekklisia*, one can directly reference the architecture when these are experienced together in the church.[8] It becomes possible to compare the symbolism of the liturgy, in its *anagogic* stages, with the masons' work. Similarly, the sacred space (*hierotopia, chora*) depicted through icons projects itself in the mind's eye into the space of the church and beyond. It illustrates the theological *hierarchia* of Dionysios and becomes embodied in the liturgy and the architecture. This enables a comparison between all three categories in terms of *theoria* and *mystagogia*. Throughout this thesis eulogies and hymns to the Hagia Sophias are a touchstone that confirm the hierarchic symbolism and unity dynamics of the cross-domed Byzantine masonry church as a virtual and conceptual House of God.

In the course of this research I have found the principles of *theoria* and *mys-*

7. This thesis uses the following translations for the above theologians:
Dionysius the (pseudo) Areopagite (1897) ***Dionysius the Areopagite, Works.*** Translated by Rev. J. Parker. London: James Parker and Co. Despite being an older translation it is still for the most part it still provides a translation that is close to the original text. At times when the translation is not quite right, or when there is need for the Greek text, a number of other trasnlation have been used and these are listed in the bibliography.

Maximos the Confessor (1985) ***Maximus Confessor: selected writings.*** Translated by G. C. Berthold. New Jersey: Paulist Press. St. Maximos is often quoted within contemporary authors' commentaries on Orthodox theology and iconography, and in this case I have used their translations.

For the liturgy of St. John Chrysostom in English translation I have used: Chrysostom, St. John (2011) ***The Divine Liturgy, of our father among the saints, John Chrysostom***, Translated by Archimandrite Ephrem Lash, Chipping Norton: Nigel Lynn Publishing, of behalf of The Greek Archdiocese of Thyateira and Great Britain. For the Greek original I have used: Papakosta, Archimandrite S. ed. (1950) ***Handbook of the Holy Liturgy [Εγκολπον της Θείας Λειτουργίας]*** Athens: Ekdoseis Adelphotitos Theologon [Theological Brotherhood Publications].

8. See Glossary for *ekklisia* and anagogy.

tagogia to be easily transferable from one category to the other, once the principle of analogy in Dionysios' theology had been understood. This has enabled me to infer a mystagogic method for the masons' work in harmony with the overall theology of the time which establishes a parallel system with the other two categories.

It is my hope that the fruits of this thesis will bring the work of the many modern masons who are continuing to build with the ancient techniques into the discussion of a theological architecture. If the masonry architecture that is mingled with the liturgy and iconography in this thesis, can stand alone as a theological analogy and method, then perhaps these everyday masons and their buildings can potentially also guide a person to the source of all good, the God who is 'beyond Mind (νοῦς)'.

1.1 THE RESEARCH QUESTIONS:

Remembrance in the House of God

The question of how architecture can guide a person to remember God includes how the materials and forms of buildings can remind us of the relationship between God and creation. One must ask how buildings consisting of materials and forms could embody this relationship, such that we can call a material artifact like a church building the 'house of God'. This presupposes that God is present in its materials and forms, as the transcendent is present in the immanent. This may seem at first to be self-evident because theology says that God is present in all of creation, however the question of how architecture is related to theology involves our perception of this in a building.

To the Byzantine eulogists the church building is not a collection of inanimate materials but is alive by the presence of God, like a living book. 'The church is a heaven on earth wherein the heavenly God "dwells and walks"' opens the *Historia Mystagogica* of Patriarch Germanos in the early 8th century, writing about Hagia Sophia, Constantinople.[9] 'You might say that some nocturnal sun filled the majestic temple with light,'[10] exclaimed Paul the Silentiary in his 6th century *ekphrasis,* echoing Dionysios the (pseudo) Areopagite's 5th

9. Germanos (In: Mango, 1972, p. 141) was probably using the word ekklisia (church) as both the people and the building, much as Maximos did in his metaphors. *'And what agreement hath the temple of God with idols? for ye are the temple of the living God;, as God hath said, I will dwell in them, and walk in them; and I will be their God, and they shall be my people.'* (2 Corinthians 6:16, King James Version)

10. Paul the Silentiary (In: Mango, 1972, v. 806, p. 89) Throughout this thesis, Mango (1972) is used to reference the translation of the *ekphrasis* of Paul the Silentiary.

century theology.[11] 'Art knows how to represent God in human disguise,'[12] claimed Choricius in his 6th century *ekphrasis* for St. Sergius of Gaza. Eusebius of Caesarea, in the 4the century called the church at Tyre the 'living Temple'[13] (*empsychos naos*).[14] Are the texts which describe masonry churches as the dwelling place of God simply using over-effusive poetic language or has this been thought through?

Simply fixing a sign that writes 'house of God' on a church cannot remind anyone of God, unless they have learned something about its exalted and beloved inhabitant. A person must be guided on the path of experience, through sense-perception and cognition, in order to remember God through creation. Theology has called such guidance 'mystagogy', derived from the ancient Greek root mueo- (μυεω) and -agogo (αγωγω) meaning 'to close the mouth' and 'to guide, or lead'. Without guidance and practices (*praxis*), we can experience the house in its materiality through the senses but we will not recognise and acknowledge its singular 'owner'. As soon as we call something the 'house of God', we return again to the question of how can the uncircumscribable be communicated by the circumscribed?[15] The house must circumbscribe its owner for us in a way that we are guided to recognise his/her signs, the signs of the transcendent God who is immanent in creation, and refer these back to God. Christian theology uses the Greek term *anafora* for referring or 'offering up' to God, which is also the *anafora* of the liturgical bread and wine as both the sacrifice and thank offering of the Eucharist[16].

11. Macrides and Magdaleno (1988) say about Paul the Silentiary's ekphrasis, *'This is unmistakably the world of Pseudo-Dionysios and Maximos the Confessor.'* (p. 77) Here they are speaking about a theological milieu, since Paul the Silentiary died the year that Maximos was born, according to the records.

12. Stanza 72 of Choricius' Laudatio Marciani (in Mango, 1967, p. 67)

13. In Macrides, R. and Magdalino, P. (1988,) *The architecture of ekphrasis: construction and context of Paul the Silentiary's poem on Hagia Sophia*, p. 52.

14. The concept of the *'empsychos naos'* was related to the similar concept of *'empsychos nomos'* or *'empsychos logos'*. This is first known to us through fragments of Hellenistic Pythagorean texts, dated around the 3rd to 2nd century B.C. concerning the perfect king as the 'living law'. They contrast the written law which is '*nomos apsychos'* with the king who is *'nomos empsychos'* -the living law. In the development of Christianity, the concept is taken up by Philo of Alexandria in the 1st century and merged with Jewish concepts of Moses as the embodiment of the law, and also refers to the Patriarchs as *'nomos empsychos'*. Thereafter, Clement of Alexandria merges Greek thought and Jewish law in the Person of Christ as *'nomos empsychos'* and *'logos empsychos'*. See Martens, J. (1994) 'Nomos Empsychos in Philo and Clement,' In: Helleman, W. ed. *Hellenization Revisited: Shaping a Christian response within the Greco-Roman world.* Latham MD: University Press of America.

15. The concept of circumscription was used to argue for iconography during the iconoclast era in the 7-8th centuries, notably by theologian Theodore the Studite in his treatise *The Defense of Icons*. See Tollefsen (2018, Ch. 2, p. 60 ff.)

16. See glossary for *anafora.* The Rt. Revd. Rowan Williams attributes 'sacrifice and justification', and 'offering the offerer' to the concept of anafora in Williams, R. (1982) *Eucharistic Sacri-*

Analogy in theological debates

How can God who is 'beyond all' definition, be described by the material world that we experience with all our senses? Theology has employed analogy which contains sameness and difference simultaneously. It can loosely be described as a way of explaining something by comparing it to something else, a partial similarity.[17] Dionyos set out the Christian method of analogy in his *Mystagogia* with an apophatic and kataphatic method, which he puts into practice with the *Divine Names*.[18] 'The ladder of cataphatic theology which discloses the divine names drawn, above all, from Holy Scripture, is a series of steps up which the soul can mount to contemplation,' according to the 20th century Russian-born theologian Vladimir Lossky, (2005, p. 37).

'The enigmatic figure of [Ps]Dionysus the Areopagite influenced both East and West but in rather different ways' according to Theocritoff (2008, p. 65). From St. Augustine onwards, analogy in Christianity was a way of explaining God through his qualities in creation. The 'divine names' were those qualities that are the property of God (*per se*), yet exist as qualities in creation by attribution (*per accidens*).[19] In the West, the scholastic theologians expanded this as the concept of 'prior and posterior analogy' (*per prius et posterius*), which centred around the relationship of God to the created world effected through the di-

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fice: the Roots of a Metaphor, Cambridge: Grove Books.

17. In the words of Archie Spencer, *'God may be thought and consquently spoken of, it is often affirmed, by means of analogy, in such a way that what we know and discover about ourselves, and creation, in some inadequate way reflects and resembles the Creator. This implies that the question of analogy is attended by, or has ingredient in it, ontological questions and presuppositions often referred to in part of the Christian tradition as the 'analogy of being' (analogia entis).'* In his book on the Analogy of Faith: the quest for God's speakability, he traces the use of analogy in history from Plato and Aristotle's philosophy, through the neo-Platonists and St. Augustine, to the medieval Thomas Aquinas and sixteenth century Cardinal Cajetan, and beyond into recent centuries with the contemporary theologians Karl Barth and Eberhard Jungel. In answer to the unresolved duality in its reasoning, a 20th century theological journey within the lineage of Christianity that derives through St. Augustine, developed through the *analogia entis* to the *analogia fidei*, as described by Spencer (2015).

18. See Lossky, V. (2005) ***The mystical theology of the Eastern Church***. Cambridge: James Clarke & Co.

19. They made distinctions between the analogy of proportionality, analogy of attribution, and indeterminate analogy. The last relates to their discussion of 'amphibolous terms' or 'ambiguous terms' which the 'daring scholar of Harvard', Harry Austryn Wolfson, refers to by,

> *'... that passage in the topics in which Aristotle discusses what Alexander calls for him ambiguous terms. Of the four types of ambiguous terms enumerated there by Aristotle […] the third is described by him as a term which is applied to two different things, one to which it belongs per se (καθ' αυτό) and to another per accidens (κατὰ συμβεβηκός)'. (Wolfson 1938, p. 165).*

This metaphysical and theological discussion was not limited to Christianity, but was conducted by Avicenna (Ibn Sina) in the tenth century, and later by Maimonides and Averroes in the twelfth, and Aquinas in the thirteenth century, developing the medieval understanding of analogy.

vine names.[20] One concludes that analogy harked back to the dialectical method of philosophy, whereby a person learns about God's relationship to creation through a process firmly rooted in cognition, in the realm of Mind or what the Platonists called *nous*. At this point there is a risk of confusion pinpointed by the 20th century eastern Christian mystic, Stylianos Atteshlis, who defined Mind as the first creation but warned that one must not confuse Mind and the Holy Spirit.[21] This process of analogy alone if it remains within the realm of *theoria,* within the *nous,* results in a gulf between God and creation, seperating body and soul.[22] Hence an active mystagogy is required.

Lossky is credited by theological scholar and environmentalist Elizabeth Theokritoff for mantaining that, 'in the East, the tradition of [Ps]Dionysus marks a triumph over Platonic hellenism; whereas in the West, [Ps]Dionysius's work became a vehicle for Neoplatonic influences.' She describes how,

> [Ps]Dionysius takes up the Neoplatonist idea of the scale of being; but he turns it into a structure of theophany, revelation of God. ... a structure in which vastly incommensurate elements - angelic, human, animate and inanimate - are all held together and function as a coherent whole, focused on the Creator. And it is a cosmos shot through with the radiance of divinity. God is at once totally other, totally beyond everything that is, and "in everything by the ecstatic power inseparable from himself". (Theocritoff , 2008, pp. 65-66)[23]

Yet the question remains of *how* God is manifest in the creation, if God is com-

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20. Prior and posterior analogy, first mentioned by Aristotle, is used to discuss 'living well' in Plotinus (1989) Ennead 1: 4, 3 'On happiness', *'But another kind of distinction might be established between them, such as when we say that one thing is prior and another posterior. Since life may be understood in different senses and as it possesses different degrees, and since by mere verbal similarity life may be equally predicated of plants and of irrational animals, and since its differences consist in being more or less complete, analogy demands a similar treatment of living well.'*

21. *'Everything is Mind. Everthing has been built of Mind, in differing degrees and frequencies of vibration. The universes are creations, within which the radiation of the Holy Monads expands, in the form of humanity, Archangels and all such expressions of Beingness. Only in this way can the universes be filled with the glory of Absolute Beingness. [...] Let us not confuse Mind, then, even in its state of super-substance with the Holy Spirit, because Mind is not the Beingness. ... Mind is only of God, it is not God.'* (Atteshlis, 1991, pp. 70-71

22. The father of 'neo-Platonism' himself, Plotinus, thought that Aristotle (and by implication his lineage) was mistaken regarding *'the nature of a first principle of all. Plotinus recognized that Aristotle agreed with Plato that (1) there must be a first principle of all; (2) that it must be unique; and (3) that it must be absolutely simple. But Aristotle erred in identifying that first principle with the Unmoved Mover, fully actual self-reflexive intellection. Plotinus did not disagree that there must be an eternal principle like the Unmoved Mover; this is what the hypostasis Intellect is. But he denied that the first principle of all could be an intellect or intellection of any sort, since intellection requires a real distinction between the thinking and the object of thinking, even if that object is the thinker itself. ... In fact, the first principle of all, the Good or the One, must be beyond thinking if it is to be absolutely simple.' (Stanford Encyclopaedia of Philosophy: Plotinus, 5. Principal Opponents. Available from: https://plato.stanford.edu/entries/plotinus/#LifeWrit)*

23. See Theocritoff, E. (2008) **'Creator and Creation'** In: Theokritoff, E. & Cunningham, M. eds. *Cambridge Companion to Orthodox Christian Theology*. Cambridge: Cambridge University Press

pletely free with regard to creation, and yet the creation has the capacity to reflect God in all purity, as a clean mirror, and ultimately to be God in action. Lossky says that within Dionysios' '"supreme theophany",

> 'the perfect manifestation of God in the world by the incarnation of the Word, retains for us its apophatic character. 'In the humanity of Christ,' says Dionysius, "the Super-essential was manifested in human substance without ceasing to be hidden after this manifestation, or, to express myself after a more heavenly fashion, in this manifestation itself." "The affirmations of which the sacred humanity of Jesus Christ are the object have all the force of the most pre-eminent negations."' (p. 37)

It is Dionysios' successor, Maximos the Confessor who argues a synthesis of action and contemplation, explained by theologian Von Balthasar (2003, loc. 5492-5509 of 8806),

> 'The concept that brings the two poles together ... is called "wisdom" (sophia)' because, and he quotes from 'Quaestiones ad Thalassium', "If one seeks for the Lord in contemplation without praxis, one does not find him". He concludes that, 'the redeemed emergence of the contemplative mind into the world does not come about simply through looking and hearing but in redeemed action, in compassion (συμπαθῶς) toward one's fellowman, which is no longer bound up in the ties of passion (ἐμπαθῶς).'[24]

In presenting Dionysios and Maximos' work from the Orthodox point of view, Vladimir Lossky, Hans Urs Von Balthazar, Elizabeth Theocritoff, as well as Christopher Veniamin and Paul Evdokimov, to whom this thesis will later refer, underscore a 20th century need to make sure that *theoria* is once again connected to *mystagogia*. The connection is essential in order that the realm of the senses (soul) and mind (*nous*) are once again rehabilitated to personal experience of God through revelation.

Both Dionysios and Maximos communicate their vision through the figure of a centre radiating out in a circular perimeter whose sphere in focused in on the centre, like a dome.[25] But it would be presumptious to make this claim without working through the concept of analogy as it directly relates to my methodology. Namely, how does analogy relate to comparative experience which is the basis of my methodology, and how does it relate to my case study church in the 7-8th century AD?

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24. See Von Balthazsar, Urs H. (2003) ***Cosmic Liturgy: the universe according to Maximus the Confessor,*** Trans. B. Daley, San Francisco: Ignatius Press.

25. cf. Guénon, R. (1995) ***Fundamental symbols: the universal language of sacred science.*** Valsan, M., Rev. Lings, M. eds. Translated by A. Moore. Cambridge: Quinta Essentia pp. 46-47 Guenon's study of ancient and simple geometrical figures in relation to a more univeralist theology was linked to his interest in masonry architecture and the practices of masons. Unfortunately his early work became involved with French freemasons who were not open to his practical builderly approach, and he did not pursue this avenue in his life's work.



FIG 3 Above left: The Baptistery of Albenga, province of Savona, in the region of Liguria of northern Italy, 5th-century late-Roman.

Available from: https://fai-platform.imgix.net/uploads/e1a340bc-d970-4ab4-9c5b-2975fde83541.jpg?crop=fit&w=1440&h=800&auto=format,compress [Accessed: 25 November, 2020]

FIG 4 Below: A narthex dome with image of Chirst at the center of radiating lines, which contain the images of the apostles and saints, Church of the Holy Saviour in Chora, Constantinople, begun in 4th century, these mosaics were completed in 14th century.

Photo by author.



Contemporary views of Analogy in three dimensional forms.

Regarding comparative experience, the contemporary cognitive scientist Douglas Hofstadter, calls analogy 'the core of cognition'.[26] His work includes analogy's non-verbal and pre-verbal aspects along with the linguistic ones, which involve 'naming' and relate to the theological aspects of analogy. Before infants speak they absorb sensory information and transfer it by analogy from one experience to another, assembling larger and larger 'chunks' of analogies until words and a conceptual language is imprinted in them via the senses.[27] Hofstadter claims for analogy the entire cognitive process, operating through similarity and difference, as the process of creation, though he does not suggest that it would indicate God. His work in cognitive science shares with the twentieth century philosopher Michel Foucault the way concepts can be transferred between linguistic and spatial means of communication.

Foucault describes analogy's role in cognition using abstract spatial figures, that are almost geometrical.[28] His book, 'The Order of Things', sees human knowledge as structured by four principles of similitude and resemblance which, to Fontana-Guisti in *Foucault for Architects*, have significant implications for architecture,

> ... Foucault explains how similitudes and resemblance guided the writing and the interpretation of texts and events for centuries. Resemblances (the four most prolific being the convenientia, aemulatio, analogy and sympathy) did so by acting as an omnipresent, invisible thread that organised the play of symbols and supplied the general framework for knowledge. [...] He thus awoke the thoughts that lay dormant within the ancient volumes of texts and rekindled the possibility of understanding the world as the scaena mundi - 'the world stage' - once again. (Fontana-Giusti 2013, p. 27)

The first similitude of *convenientia*, is envisioned as links of a chain taut at both ends 'that brings things together and makes adjacent things similar [...] holding the extremes apart [God and matter], yet bringing them together ...' (Foucault, 2002, p. 21); the second is *aemulatio*, a resemblance that needs no contact, 'by duplicating itself in a mirror the world abolishes distance proper to it' (ibid. p. 22) like 'a series of concentric circles' (ibid, p.23); the third similitude he

26. Hofstadter, D. (2001) ***Analogy as the Core of Cognition***, The Presidential Lecture, Stanford University, https://shc.stanford.edu/multimedia/analogy-core-cognition.

27. Hoffstadter calls the process of building increasingly dense assemblies of analogies 'chunking'. See also Hofstadter, D. (1999) ***Goedel, Escher, Bach*** (Ch. X) and ibid. (2001 pp. 1, 2, 9). In his terms, allegory could be considered as a dialogue between the larger 'chunks' of analogies.

28. See Foucault, M. (2002) ***The Order of Things: an archaeology of the human sciences***. [Kindle] Oxford: Routledge Classics. Available from: https://kindle.amazon.com



FIG. 5 Above left: One of the mosaic radiant crosses remaining in Hagia Sophia from the iconoclastic mosaics which decorated all the surfaces. These were partly replaced by the figurative mosaics of the Theotokos and the Anaiipsis. This one is on the arch above the iconostasis

Photo by author.



FIG 6 Below left: View up into the dome of Hagia Sophia, Thessaloniki, from the base of one of the four piers, showing the pendentives fitting between the broad arches. The mosaic shows Christ in ascension, borne up by angels.

The chain from which the chandelier is suspended connects to the dome about two metres below its geometric, gravitational centre.

Photo by author.

calls analogy, in which '*convenientia* and *aemulatio* are superimposed' and he describes analogy using the figure of a central point which can extend 'to an endless number of relationships', whose 'power is immense' (ibid. p. 23) and whose reversibility and polyvalency endow analogy with a universal field of application. 'Through it, all the figures in the whole universe can be drawn together.' (ibid, p. 24); and the fourth similitude of sympathy, which can 'traverse the vastness of space in an instant' (ibid, p. 25), and generates its opposite of antipathy in order that distinction is maintained in the world, 'ceaselessly drawing things together and holding them apart', while 'the same remains the same, riveted onto itself' (ibid. p. 28).[29] Here we find the cognitive geometry of Dionysios yet the fourth similitude of sympathy as it stands does not resolve the problems of a 'gulf between God and the world'. [30] In this thesis these categories are applied differently, via orthodox Christian theology, in which there is 'acceptance of a paradox. God in his essence has no affinity with the world, but by his powers the Word pervades whole universe.' (Theocritoff, 2008, p. 64). To help us enter the theology of the 6th-9th century AD, through shared philosophical geometry, one must turn to the theologians of the time.

1.2 MY APPROACH TO THESE QUESTIONS

Method and Analogy in Dionysios the (pseudo) Areopagite's theology

Foucault's 20th century four similitudes, as spatial metaphors, come very close to Dionysios the (pseudo) Areopagite's four treatises of around 500 AD; Symbolic Theology (now lost) and Ecclesiastic Hierarchies (sacramental and human); Divine Names; Heavenly Hierarchies (also known as celestial or angelic); and Mystical Theology (*Mystagogia*). These were complied in the mid-7th century by patristic theologian St. Maximos the Confessor.[31] In Dionysios one senses the full force of the Athenian school of Philosophy shifting into a Christian mode of expression.[32] Perhaps this is why Maximos not only saves his work but also, in his own *Mystagogia,* respectfully adds his own interpretation of the Eucharist liturgy in relation to the *ekklisia* (church) as both *synaxis* (assembly)

29. Foucault himself applied the structural principles of these four similitudes to excavate the knowledge of the last four centuries as a 'scaena mundi'.

30. One might call this 'same remains the same, riveted onto itself', the 'glass ceiling' of the Unmoved Mover as 'fully actual self-reflexive intellection'.

31. Through Dionysios, the patristic line of Maximos the Confessor continues an unbroken connection from the pre-Christian philosophy of Plotinus, and the school of Plato. Although Plotinus always acknowledged his predecessors with respect, in many ways he effected a fundamental change in Greco-Roman religion, through his mystical philosophy, into a form that could be moulded to the theology of the emerging Christianity through Dionysios.

32. Dionysios is sometimes called 'the Christian Proclus (412-485 AD)' Louth (2007, p.156).

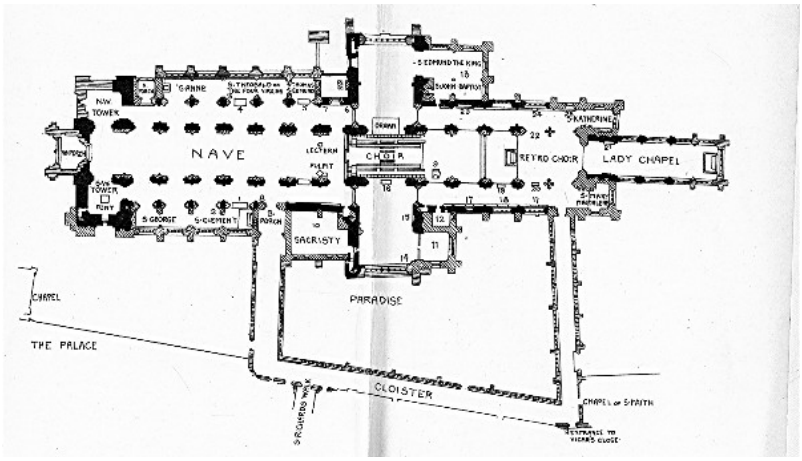


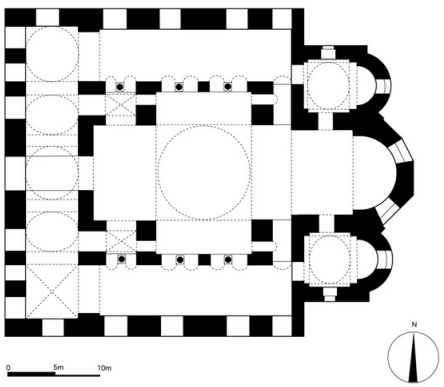
FIG 7 Left: Plan of Chichester Cathedral, England; a medieval sacramental basilican church in which the pulpit, altar and choir are positioned close to the centre of the crossing.
Available from: http://www.hellenicaworld.com/UK/Literature/HubertCCorlette/en/images/wimage45.jpg [Accessed: 3 January, 2021]



FIG 8. Above: View of Hagia Sophia from the street, SW corner. Photo by Author

FIG 9. Below right: Front Entrance of the Cathedral church of Hagia Sophia, Thessaloniki
Photo by Author

FIG 10. Below left: Plan of Hagia Sophia Thessaloniki.
Source: Van Millingen (1912)





and *naos* (temple).[33] Living in the century between Dionysios and Maximos, St. Dorotheos of Gaza (505-565/620) grounded the 'four similitudes' in the experience of the *ekklisia* as community,

> Suppose we were to take a compass and insert the point and draw an outline of a circle. The centre point is the same distance from any point on the circumference. Now concentrate your minds on what is to be said! Let us consider that this circle is the world and that God himself is the centre; the straight lines drawn from the circumference to the centre are the lives of men. To the extent that the saints enter into the things of the spirit, they desire to come near to God; and in proportion to their progress in the things of the spirit, they do indeed come close to God and to their neighbor. The closer they are to God, the closer they become to one another; and the closer they are to one another the closer they become to God. (Dorotheos, 1977, p. 139)

He employs the cognitive geometry of the 'four similitudes' with God as the direction, for the development of the person and the community through love of one's neighbour (see Figs. 3 and 4). Contemporary priest and professor of patristic and Byzantine studies Andrew Louth reiterates that a person's act of praise and devotion, responding to God's love, is necessary for giving a mystagogic direction to the *theoria* of analogy.[34]

> The first thing to notice about these various theologies is that in them we learn how we can *celebrate (hymnein)*. These theologies are not about how we can predicate the qualities of God, but about how we can praise him. For Deny's [Dionysios'] theology is not concerned primarily with intellectual, academic matters (though his Divine Names was used as a textbook on analogical predication in the medieval West); rather it is concerned with the creature's response of praise and worship to the Love of God. (Louth, 2007, p. 160)[35]

Von Balthazar (5626 of 8806) finds Maximos words for this theme, 'The "tenderness" that melts their hearts is a "capacity to love given to them" by God. The highest synthesis of the soul, the "wisdom" [*sophia*] that has penetrated to God's truth and Goodness, translates itself into this necessity to love. "If someone loves God, he cannot avoid loving all people." In short, the love must be returned to God.

The combined works of Dionysios and Maximos were completed not long before the construction of my case study church of Hagia Sophia, Thessaloniki,

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33. See Glossary for *synaxis* and *naos*.

34. *'Even the act of praise itself involves a costly giving - not simply the giving up of time, but the reorientation of hope and imagination outwards. Praise, celebration, adoration, is a direction away from self-preoccupation'* (Williams, 1982, p. 29)

35. See Louth, A. (1981) ***The Origins of the Mystical Tradition: From Plato to Denys*** New York: Oxford University Press

and are significant to this thesis as they establish how the fourth similitude of sympathy can be lived, and how it then becomes built into a Byzantine church such as Hagia Sophia, Thessaloniki.

The figure that Dionysios uses to describe the relationship between God and creation is like that of Foucault's third similitude of analogy. God is in the centre and creation is on the perimeter, and what lies between, 'the space occupied by analogies, is really the space of radiation' (Foucault, 2002, p. 25), proceeding out from the centre (*proodos)* and returning to it (*epistrophe)*.

> 'Everything and any part of anything participates in the One, and on the existence of the One everything depends for its existence' (DN XIII. 2: 977 C, In: Louth 2007, p. xx).

Dionysios unfolds this unitary space in the various sets of hierarchies in his treatises using symbolic, cataphatic, and apophatic theology, according to the sameness and difference found in analogy.[36] Dionysios explains the purpose of these hierarchies which are built upon the linking of similarity and difference, like the chain of *convenientia,* within the overall spatial figure of analogy. Dionysios presents his hierarchies, stretched between heaven and earth, as a 'divine ray' of creation and also of assimilation,

> Hierarchy is, as I understand it, a sacred order and knowledge and activity which is being assimilated as much as possible to likeness with God and, in reponse to the illuminations that are given it from God, raises itself to imitation of Him in its own measure ... The end of hierarchy, then, is assimilation to God and union with Him as far as possible. It is God Himself who is our guide in all sacred knowledge and activity, and looking unwaveringly to his divine comeliness, the hierarchy recieves his stamp as much as possible and makes its own members divine images, perfectly clear as spotless mirrors, receptive to the ray of the primordial thearchic light, and divinely filled with the brilliance that has been given to it. (CH III. 1 f.: 164 D-165 C, Louth, 2007)

Apophatic theology affirms the ways in which God is 'not like', and kataphatic theology affirms the ways in which he is 'like', ending in symbolic theology. The basis of Christian Symbolic Theology was established through the Nicene Creed, known as the "Symbol of Faith", by the first ecumenical council in Nicaea in 325 AD. It defines the Trinity (One God in three Hypostases) and included the word *homo-ousios* (of one being) to signify the one-ness of the Son with the Father. The creed also defines that the son is *yennithenta* and not *poiethenta* which is usually translated as 'begotten not made', though the word *yen-*

36. See glossary for the terms symbolic, cataphatic, and apophatic. Louth explains, *'Denys distinguishes between 'unions' (henosis) and 'distinctions' (diakriseis) in God. The 'unions' are ultimately incomprehensible to us, for we can only know things by making 'distinctions'.* Nevertheless, behind the distinctions lies the union or unity (henosis) which the distinctions unfold. (Louth 2007, p. 161)

nithenta could equally well mean 'born'.[37] Etymologically the word means 'having been caused to come into being', and therefore not fashioned out of some pre-existing matter. We must presume that Dionysios' 'Symbolic Theology' was in agreement with the 'symbol of faith', since his remaining works teach that the entire universe is *homo-ousios* and *yennithenta* from God's being. Through his *Mystagogia* and other extant works the 'cosmic praise' of theophany resounds in which 'the creator is also the saviour' and 'each creature reflects the divine glory in its own unique way, according to its analogy with its Creator'. Theocritoff (pp. 64-65)

Dionysios' kataphatic and symbolic theology is the method of 'affirmative expressions' of likeness, which begins with the first principles and descending through intermediaries to the farthest things (τὰ ἔσχατα); and the apophatic theology, of unlikeness, ascends from the farthest things up to the original things (τὰ αρχικώτατα).[38] All together form 'a system of ordered activity and this activity Denys often calls ascent. But we must be careful ...' advises Louth, (2007, p. 165).[39] Dionysios' ascent is powered by the synergistic action of the downward and upward motion of the hierarchies, or the inward and outward movement of the space of radiation. As Louth (2007) puts it,

> Both cataphatic and symbolic theology, then, point beyond themselves to the way of negation - apophatic theology. The reason for this is fundamental and theological: God is un-

37.Since this thesis is about 'making' and its relationship with a kind of 'birthing' of a work of architecture not from one's mind but from one's whole being, it is necessary to convey the root of the word γεννηθέντα (*yennithenta*), which is the passive participle of the root verb γίγνομαι, 'to come into being'. This verb is transitive and intransitive, in active, passive, and middle voices. It can mean 'I become/come into being' or 'I cause to come into being' or 'I am caused to come into being'; 'I give birth' or 'I am born'; 'I generate' or 'I am generated'. The English translation 'begotten' relies heavily on the epithet 'father' as an analogy for God. In another context the same word could mean 'born' of a mother which we know to be the case for Christ. Similarly, Maximos' use of the word *anthropos* has been translated as 'man' which has distracted us from his universalist, abstract intent. Translating the word *yennithenta* as 'begotten', imprisons us in the imagery, and distracts us from the intended theological meaning of being generated by the whole being of God, rather than from some pre-existing material outside of God.

38. See Dionysios, MT II. None of the existing translations by Parker, Rolt, or The Shrine of Wisddom really seem to do justice to this sentence, however for reference see Dionysios (1897, MT II, p. 91).

39. Louth (2007) explains that *'symbolic theology and cataphatic theology are not far apart'* (p. 165) and that the system of hierarchies, as theophany, embody a threefold process of purification, illumination, and perfection. Louth steers the reader toward Dionysios' example of the centre and perimeter circle as a clearer way to envision this. However, Dionysios does often illustrate these hierarchies as an ascending and descending order which corresponds to the earlier neo-Platonic levels of Plotinus as the realms of the soul (senses), of *nous* (mind), and the One (God). Louth wisely cautions that, *'Only the ascent from catechumen to contemplative, in Denys' language ("ordinary layman", as we would say), is normal.'* Similarly, these hierarchies should not be confused with St. John Climacus' mystagogic ladder of ascent. In Dionysios, all these types of imagery co-exist; the analogical movement from centre to perimeter and back again, as well as the ladder of ascent and descent of *theoria*, and the ascent from 'catechmen to contemplative' as experienced *mystagogia*. We see all these figures in Orthodox Christian iconography.

knowable in Himself, he is not an object of knowledge. With our understanding we can grasp God's manifestation of Himself in creation, but in the very act of understanding God's manifestation we realise that the One thus manifested transcends his manifestation. For the end of both cataphatic and symbolic theology is assimilation to God, union with God; and the more the soul knows and loves God in His manifestations, the more she longs for God in Himself. (p. 167)

Dionysios thus addresses Foucault's fourth similitude of sympathy when speaking of his teacher Hierotheus who,

... did not so much learn about divine things, as suffer them and through his sympathy with them, if I may use such terms, was perfected to an untaught and hidden faith concerning them and union with them ... (Dionysios, DN II.9, 648 B, In: Louth 2007, p. 169).

He specifies this clearly in the Celestial Hierarchies,

The Divine Blessedness, to speak in human terms, is free from any unlikeness, full of eternal light, perfect and lacking no perfection, itself purifying and enlightening and perfecting, or rather purification itself, the primary source and principle by itself of all perfecting initiation, beyond purification, beyond light, the source of all hierarchy, and yet seperated by its transcendence from anything that is sacred. (Dionysios, CH III. 1 f.: 164 D-165 C, In: Louth 2007, p. 165)

Dionysios is very firm in his Mystagogia that there is a condition in which a person not only lives but thrives in a state of ecstatic love, without losing their logic or their senses.

I think signifies that the most Divine and Highest of the things seen and contemplated are a sort of suggestive expression, of the things subject to Him Who is above all, through which His wholly inconceivable Presence is shown, reaching to the highest spiritual summits of His most holy places; and then he (Moses) is freed from them who are both seen and seeing, and enters into the gloom of the Agnosia; a gloom veritably mystic, within which he closes all perceptions of knowledge and enters into the altogether impalpable and unseen, being wholly of Him Who is beyond all, and of none, neither himself nor other; and by inactivity (*anenergesia*) of all knowledge, united in his better part to. the altogether Unknown, and by knowing nothing, knowing above mind. (Dionysios 1897, MT I: III, p. 90)

In Dionysios, analogy is the cognitive ladder whose rungs of ascent and descent are provided by the divine hierarchies. When its cataphatic-symbolic and apophatic movement is in motion it provides the fuel to reach the limits of the *theoria*. The connection to God requires going beyond the *nous.* For Dionysios this is a mystagogic transition, like the movement a spacecraft at the limits of earth's atmosphere when it has distanced itself sufficiently from earth's gravita-

tional pull. Maximos puts it another way, says Von Balthazar (2003, loc. 5575 of 8806),

> 'The unforgettable insight of wisdom, contemplation, and knowledge (or the soul's potentiality, practice, and activity) is the endless movement that circles constantly and deliberately around the intelligible reality beyond all insight, whose limits are that one thing that cannot be concealed, Truth itself. ... Through faith in the Good, forethought finds its limit and comes to rest from its natural action.'

Here all the discourse of analogy contained within the realm of the *nous* is transcended, and in this state of anenergesia (doing while not doing) no further fuel is needed to orbit.[40] If we are to believe Dionysios (1897, p. 90) it simply puts the person 'knowing above mind' [ὑπέρ νοῦν γινώσκων] (MT I: III).[41]

Dionysios' *anenergesia* and work 'not made by hands' in Jesus' prophecy

This anenergesia (doing while not-doing) has the literal meaning of being 'not one's own work-energy'. The introduction of this concept into Christianity via Hellenistic philosophy has been traced by Wolfson to Philo of Alexandria,

> Philo reduces all the properties predicated of God to only a single property, that of acting […] 'It is the property of God to act (τό ποιεῖν)', he says, which property, he adds, 'we do not ascribe to any central being, for the property of the created is to suffer action (τό πάσχειν)' [Cherubim 24: 77] (Wolfson 1962, pp. 133-134)[42]

40. The state of *anenergesia* has been translated by Louth, and others, as 'complete passivity', however in this thesis I have translated it as 'doing while not doing' as this remains close to Dionysios and Maximos' theological definitions, while being more easily understood in the context of masonry construction. It can be understood as 'not one's own work-energy' from its constituent parts: an - not, en - in, ergesia - work, kinetic energy. Thus anenergesia means energy that is not generated from within oneself, hence the 'work not made by hands' or work done by God. In *Theophany: the neo-Platonic Philosophy of Dionysios the Areopagite*, Classical scholar Eric D. Perl (2007, Ch. 6, pp. 83-99) explains that the *nous* has a much broader scope of cognition than the *analogia entis* of medieval Latin theology, and includes both reasoning and intuition.

41. Note: Dionysios places God at the centre and creation on the perimeter, and he lays out the Celestial Hierarchy through 'angelic orders'; his Divine Names follows a similar heirarchic logic. The word for angel in Greek means 'announcer' or 'divine messenger', while in the Semitic languages like Hebrew, Aramaic, and Arabic, its equivalent is 'melek' or 'malak' meaning King, or 'Doer', the one who takes action, who is capable of doing, representing God's kinetic energy. *'The hierarchical orders are only God's revealers and messengers'* (Louth, 2007, p. 170). Dionysios' angelic orders are the active communicators of Hoffstader's *'interstate freeway of cognition'*, namely analogies. They are the radii which connect the centre and the perimeter circle; the ones who are conveying the divine names from the principal point to their attributive place in creation according to divine law and order. They will also be the ones who, once the human devotee has divested himself of the paths of forgetfulness, will guide him to the centre again. The late Byzantine iconography of the Church of the Saviour in Chora illustrates this principle with Christ depicted in the centre as was the norm. In Hagia Sophia Thessaloniki, the central image is of Christ is in ascension, being 'taken up into God' serving as a visual reminder that there is no possibility of self-image or any image of God at the point of union. (See Fig. 6)

42. According to Wolfson (1962), in *Philo* (1:1), '*... the God of revelation was present in the Torah through the actions and events of prophetic nature. In the work of Philo of Alexandria,*



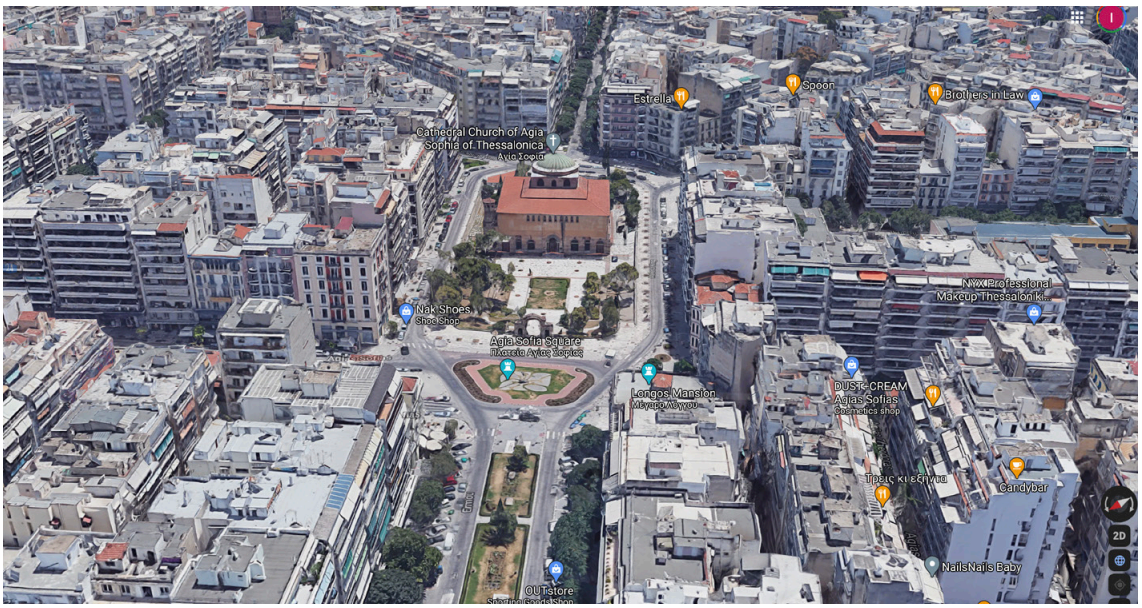


FIG. 17 Top, FIG. 18 Above: The cathedral church of Hagia Sophia and her forecourt are the focus of Ermou street, crossing with Hagia Sophia Avenue in downtown Thessaloniki.. *Map Available from: https://www.google.com/maps/place/Cathedral+Church+of+Agia+Sophia+of+Thessalonica/ [Accessed: 29 August 2020]*

FIG. 19 Below: Interior of the Cathedral church of Hagia Sophia, Thessaloniki during a baptism. The church is part of new and old life of the city. *FIGs. 17, 19 Photos by author.*



The interplay of action and rest is Philo's solution to the challenge of predication in philosophy. Theocritoff (2008, p. 67) puts it another way, 'Between the utterly transcendent creator and creatures there is a link, and the link is God himself in action.' In all simplicity, as prophets do, Jesus simply showed the uninitiated ordinary person the limits of ritual law, the analogy of symbolic theology, and gave them a taste of the effects of transcending the *nous*, by his actions.

It is related several times in the gospels that Jesus healed on the Sabbath, the day in which the Jews refrain from work and are mindful of their place as the passive created, not the active creator. In the gospel of Luke, Jesus was teaching in a synagogue on the Sabbath, and healed a woman who immediately praised God and not him.[43] But the synagogue authorities condemned it as his personal work, to which Jesus replied,

> Thou hypocrite ... ought not this woman, being a daughter of Abraham, whom Satan hath bound, lo, these eighteen years, be loosed from this bond on the sabbath day? ... Then said he, Unto what is the kingdom of God like? and whereunto shall I resemble it? (Luke 13: 15 - 18, KJV)

On this occasion his teaching of *anenergesia*, which I translate as 'doing by not doing', began with the healing and 'loosing of bonds' which was attributed to his hands yet belonged to God, and followed immediately afterwards with the question of how to make an analogy for the Kingdom of God and twice he uses a parable,

> It is like a grain of mustard seed, which a man took, and cast into his garden; and it grew, and waxed a great tree; and the fowls of the air lodged in the branches of it. And again he said, Whereunto shall I liken the kingdom of God? It is like leaven, which a woman took and hid in three measures of meal, till the whole was leavened. (Luke 13: 19 - 21, KJV)[44]

He taught this same message through architecture with reference to the Jewish Temple, which he calls his 'Father's house' on the occasion that he drove out the money changers, sheep, oxen, and commercial sellers. When asked for his authority we read in the Gospel of John,

> Jesus answered and said unto them, Destroy this temple, and in three days I will raise it up.

a Hellenistic Jew, this God of revelation is described in the Greek language using terms from Greek philosophy and culture.'

43. On another occasion, when the leper whom he healed returned and praised God but prostrated before him, Jesus responded, *'your faith hath made you well'* (Luke 17:19, KJV).

44. Every prophet must use the stuff of the mind to illustrate their teachings to their students, and the students must be mindful of those teachings, not to deify the Mind (*nous*). Mind is the first creation, but mind is not the Holy Spirit. It is the Holy Spirit that creates. Mind cannot build with mind alone. So the Holy Spirit is creative, Mind is responsive. It is the Holy Spirit which creates and maintains, and Mind gives it form, gives it the symbolic theology.

> Then said the Jews, Forty and six years was this temple in building, and wilt thou rear it up in three days? (John 2:19-20, KJV)

This teaching was expanded in the acts of the Apostles. Paul, as he stood in front of the Areopagus in view of the ancient Athenian acropolis and its temples, declared,

> God that made the world and all things therein, seeing that he is Lord of heaven and earth, dwelleth not in temples made with hands; Neither is worshipped with men's hands, as though he needed any thing, seeing he giveth to all life, and breath, and all things; (Acts 17:24-25 KJV)

A few verses later (verse 34), the name of Dionysios the Areopagite is mentioned as a convert who was, for many centuries, mistaken for the 5th century Dionysios the (pseudo) Areopagite, perhaps intentionally so by the theologian. Irrespective of this, the concept of the temple 'not made by hands' grew as the concept of the temple of 'living stones' and the temple of the body of Christ who rose three days after death.

> Coming to Him as to a living stone, rejected indeed by men, but chosen by God and precious, you also, as living stones, are being built up a spiritual house, a holy priesthood, to offer up spiritual sacrifices acceptable to God through Jesus Christ. (Peter 2:4-5, NKJV)

> For we know that if our earthly house of this tabernacle were dissolved, we have a building of God, an house not made with hands, eternal in the heavens. (Corinthians 5:1, KJV)

The seeds of the idea that a temple should be made by God directly was thus implanted in the imagination of the followers of Jesus, the healer, whose entire life had surrendered to God's will, such that his work was not by his own hands. Three centuries later, the idea of a living church, was expressed as *empsychos naos* (ensouled temple) by Eusebius of Caesarea, echoing the expression *empyschos nomos* (ensouled law), an epithet ascribed to kings as the 'living law'. Eusebius gave this epithet to the church in Tyre in his eulogy, blurring the line between Christ as the divine king, the human community of Christians as the 'living stones', and the physical building itself as being alive by God's presence.

The *ekklisia* (church) and *theourgia* (making holy) in Dionysios' theology.

This blurring of the line between the divine and material world was not new and was part of pre-Christian antiquity encompassing a range of activity from divination to theurgy (*theourgia*).[45] It was examined by the schools of philosophy and returns us to the issue of the relationship between God and creation through symbolic theology. According to Louth (2007),

45. See Glossary for theurgy.

> Denys regards symbolic theology as the 'conversion of what is taken from the realm of the senses to the service of the divine' (MT III: 1033 A, p. 163).

Dionysios' pivotal body of work, which brought ancient philosophy into Christianity, assists this thesis to research how the method and analogy of masonry architecture enabled this 'conversion of what is taken from the realm of the senses to the service of the divine', based on the principle of the work 'not made by hands'. When his treatises are considered together, one can see that Dionysios merges the *theoria* of his hierarchies into the *mystagogia* of personal experience. In fact, his *Mystagogia* is the culmination of his works on hierarchies. His logical and sensory hierarchies surely guide to the border with *anenergesia*, a state of 'knowing above mind' and 'doing while not doing'. In this thesis I explore the methods whereby masonry architecture might also entrain its mason through its logical and methodical construction in relation to its sensory stones, earths, mortars and bricks, and its hierarchy of walls, arches, vaults and domes. I argue that masonry architecture built from the earth is a form of prayer, entraining the builder and the inhabitant through all the senses to reach through them to union with God. In this, the love of the mason for his earthen materials is as essential as the transcendental 'law of love, which God has implanted in the hearts of all people.' (Maximos, Epistles, 4; p. 91, 608C). To research this, masonry's correlation with the ritual of the liturgy will be essential.

Dionysios' work had broad-ranging influence with regard to masonry architecture.[46] The late 5th century timing of his life is significant when one considers the unprecedented, bold, and many would say 'divinely inspired' decision of Emperor Justinian I in the early 6th century, to re-build the Roman empire's foremost cathedral of Hagia Sophia in Constantinople with domed masonry construction as a conceptual example (see FIG. 8). This was Imperial validation for a theological content in masonry architecture. It accelerated the trend whereby traditional Greco-Roman forms and techniques were shifting over to a masonry built exclusively with self-supporting arches, vaults, and domes, from the materials of the earth. This validation must have dignified and sanctified the masons' construction methods, their *mystagogia*.

Unfortunately today, the word mystagogy or mysticism has acquired per-

46. Dionysios' (St. Denys') work was influential in the articulation of Gothic architecture, according to the art-historian Erwin Panofsky. He writes that the Abbe Suger was inspired by Dionysios' theology when he re-constructed the church of St. Denys in the early 12th century, which was a definitive prototype for Gothic architecture. Panofsky translated Suger's extensive writings on the construction of the abbey, *Liber de Rebus in Administratione sua Gestis, Libellus Alter de Consecratione Ecclesiae Sancti Dionysii, and Ordinatio*, and added his own commentary. Panosky's 1946 edition has been republished by his daughter, Panofsky-Soergel, G. (1979) *Abbot Suger on the Abbey Church of St. Denis and Its Art Treasures*, Princeton: Princeton University Press.



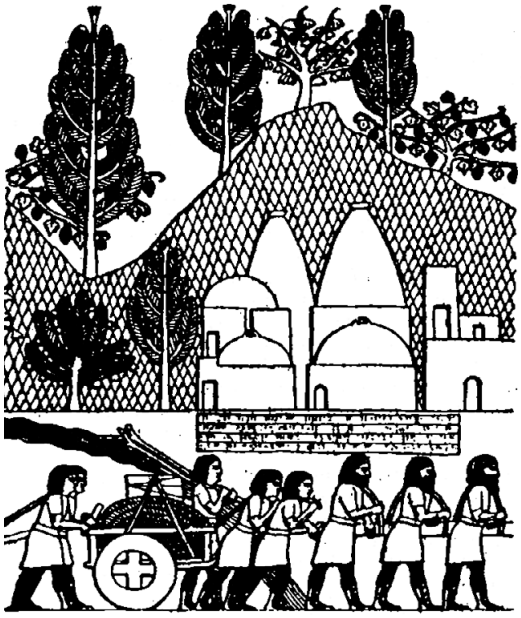




FIG 11. Top left: Aerial view of Stonehenge, Salisbury Plain, circa 3,000 BC.

Available from: https://tracycooperposey.com/wp-content/uploads/2014/08/stonehengeabove.jpg [Accessed: 8 January, 2021]

FIG 12. Top right: Assyrian bas-relief from Nimrud (883–859 BC) in Mesopotamia, showing domed structures in the background.

Source: Encyclopedia Britannica (1911), Available from: https://www.researchgate.net/profile/Shipeng_Chen4/publication/343994551/figure/fig2/AS:930590559846401@1598881487022/Assyrian-bas-relief-fromNimrud-showing-domed-structures-in-the-background-Encyclopedia.ppm [Accessed: 15 November, 2020]



FIG 13. Middle left: Gobekli Tepe (10,000 - 8,000 BC) in Eastern Turkey, (historically, Osroene Province, and four hours by foot from Urha/Edessa/Urfa)

Photo by author.

FIG 14. Bottom left: Gre Filla Mound in the same province of Eastern Turkey, known as 'Diyarbakır's Göbeklitepe' (9,300-years-old)

Photo by author.

jorative connotations as being irrational, superstitious or, as Cardinal Newman quipped it 'begins in mist and ends in schism'.[47] In this thesis it has not been possible to avoid this word, since it is used by the early Christian theologians to whom I refer throughout this thesis. I have therefore tried to explain its original meaning as guidance through the senses, the mind (*nous*), and the holy spirit, to becoming 'a fellow-worker with God', and even to *henosis* (one-ness with God).[48] In this thesis the word 'mystagogy' is sometimes interchanged with 'method' when referring to masonry construction. I have sought to explain that what is meant are practices or methods that have a logical and sensory basis, done wholeheartedly with love, as if they were a type of prayer returning the love to God; these could include ritual actions, daily practices, and many practical actions such as building construction.

Links between liturgical mystagogy and the *ekklisia* (church)

About a century after the construction of Hagia Sophia, Constantinople (532 AD and about a century before the construction of Hagia Sophia, Thessaloniki (7-8th C), Maximos the Confessor (c. 580-662 AD) positioned his *Mystagogia* about the liturgy, as a self-professed supplement to that of 'the venerable old man, Dionysios'. He illustrates his own *Mystagogia* at one point with a Christological analogy: At the centre of the circle of creation, the position occupied by God (the One) in Dionysios' theology, Maximus temporarily places the figure of Christ as *anthropos* (human), without of course moving the centrality of God to which he then returns in his text.[49] This prefigures Foucault's space of analogy, where there is 'one particularly privileged point ... This point is man.' (Foucault, 2002, p. 24). Maximos' reference is to Christ as *anthropos* in the context of the *synaxis* in communion.[50] He refers to a collective humanity, both men and

47. Perhaps part of such misunderstanding derives from a popular belief that God's relationship with creation is effected through the human being more than through the 'inanimate' natural world, and certainly not through artifacts made by humans, like buildings. This popular conception is not borne out in the texts of either the Torah (Old Testament), Gospels (New Testament), or the later Quran. Many references exist throughout all three texts to cities and buildings, gardens, houses, ships, and specific examples like Noah's ark, the Hebrew temple, the garden of Gethsemane, and the 'upper room of Zion', in which these have been read as signs, analogies, metaphors, and allegories for heaven, human beings, human community, and God.

48. *'The purpose of the hierarchies [of Dionysios] is assimilation to God and union with him. This is accomplished by each being fulfilling its proper role in the heirarchy. As each being accomplishes this it becomes a fellow-worker with God - theou synergos - and manifests the divine energy which is in it as much as possible. The result of this assimilation to God - deification - and union with Him is to make of the created order a perfect theophany: each part in its own proportion manifesting God'* (Louth, 2007, p.165)

49. Maximos (MT Ch. IV)

50. The Greek root of the word analogy is *ana* - up or alongside, and *logos* which is the object-noun of the verb *lego* - I speak. Logos also alludes to the meanings of word, location, and focus. In Christianity the *logos* became identified with the figure of Christ. Before that, *logos* in the





FIG. 14 Above: Domed village houses in Harran, Eastern Anatolia (Turkey) in the early 21st century. Located amid the ruined ancient city of Haran, Osroene Province, less than a day's walk from the rivers of the Tigris and the Euphrates, and close to ancient Edessa/Urha/Urfa.

Photo by author.

FIG. 15 Middle left: The archaeological site of Khirokitia, historically Kitium region, Cyprus (7,000- 6,000) BC

Available from: https://www.megalithic.co.uk/a558/a312/gallery/Mediterranean_Islands/Cyprus/Choirokoitia-Catrinm-Rotated--Resized.jpg [Accessed: 14 November, 2020]



FIG. 16 Bottom left: Artist's reconstuction of Khirokitia as domed beehive dwellings, Cyprus.

Available from: http://www.historiadelasciviliza-ciones.com/2013/02/khirokitia-poblado-neolitico-de-chipre.html [Accessed: 10 June, 2018]

women, echoing Genesis 5:1-2 where Adam is both the male and the female.[51] In Maximos the centrality of 'man' refers to the divine human, which in turn is a community sustained in this central position through love. Dionysios illustrates with St. Paul's words,

> 'I live no longer, but Christ lives in me'. As a true lover, and beside himself, as he says, to Almighty God, and not living the life of himself, but the life of the beloved, as a life excessively esteemed. (Dionysios 1897, DN IV:XIII, pp. 36-37).

This exchange of place between Christ and the *synaxis*, between divine and human, bring us back the *anafora* of the Eucharist, to that action which Rowan Williams describes as the offerer and the offering.[52] By materialising the divine human as Christ in the centre of the space 'saturated with analogies', Maximos links his version of liturgical mystagogy with Dionysios' more philosophical and cosmically oriented mystagogy and hierarchies.[53] He give the researcher like me access to the *theourgia* of Dionysios via the living ritual of the early Christian liturgy. This will be essential to this thesis' methodology.

1.3 THE METHODOLOGY OF THIS THESIS

Reasons for choosing a cross-domed basilica for my case study

A look at how Western authors have treated the relationship of theology to architecture, shows that the liturgy is central to their enquiries. Kieckhefer in his book *Theology in Stone* analyzes spatial dynamics through,

> ... three of the most common ways the shape of a church can be linked to notions of spiritual process enacted specifically in liturgy: the longitudinal space of the classic sacramental

sense in which it was used by the Greeks is not the way it is now understood in the West. Algis Uzdavinys (2004) who urges us, *'not to misunderstand the Greek word logos and ... render it exclusively as "reason" or "discursive reasoning"', but instead to understand that, '... the greek word logos can also mean divine speech as well as noetic apprehension of the first indemonstrable sacred principles, archetypes, or gods which are transcendent and immanent at the same time. In addition logos can mean analogy and proportion.' (*Loc.144-158 of 7731)

51. *'Male and female created he them; and blessed them, and called their name Adam, in the day when they were created.'* (Genesis 5:1-2, KJV)

52. See Williams, R. (1982) **'Eucharistic sacrifice: the roots of a metaphor'**, *Grove Liturgical Study* 31. Bramcote, Nottingham: Grove Books. 'The eucharist and baptism are both inseperably the receiving of Holy Spirit, constituting believers the dwelling place of the spirit, a temple in which pure offering may be made. Our offering - in prayer generally and in the aucharist especially - 'invites' the transforming action of the Holy Spirit, because it is offered by the baptized who are already kindled by the Spirit' (Williams, 1982, p. 23)

53. According to Foucault (2002) 'There does exist, however, in this space, furrowed in every direction, one particularly privileged *point: it is saturated with analogies (all analogies can find one of their necessary terms there), and as they pass through it, their relations may be inverted without losing any of their force'* (p. 24). Foucault's philosophic analysis, which is directed to the humanism of the 16th-20th century, continues, *'This point is man he stands in proportion to the heavens, just as he does to animals and plants ...'* (ibid, 2002, p.24)

> church, meant for procession and return; the auditorium space of the classic evangelical church, built for proclamation and response; and a relatively new form of space in the modern communal church, designed for people to gather in community and proceed back out into the workaday world. (Kieckhefer 2004, Loc. 333 of 5791)

Kieckhefer regards the spatial dynamics of the centrally planned church as 'basically a variation on the longitudinal church.' (ibid. 2004, loc. 642 of 5891) The sacramental centrality of focus is confirmed by the medieval text on *The Symbolism of Church Ornaments* in Durandus' *The Rationale Divirnorum Officiorum* written in the mid-13th century,

> The cross of triumph is placed in the middle of the church, because the Church loveth her Redeemer in the middle of her heart ... (Durandus 1893, p.280)

In fact, most of the medieval basilican and gothic cathedrals have the same essential features as the centrally-planned cross-domed basilican church that I have chosen for my case study; a central focus, an orientation east-west, a north-south crossing, a perimeter, a horizontal axis of progression, a quality of verticality, a narthex or vestibule to the west and flanking towers (see Figs. 7, 8). To Kieckhefer (2004) the procession of liturgy is 'not towards God but towards sacramental communion with God' (loc. 431 of 5791)

> The ebb and flow of liturgical movement echoes the rhythms of spiritual life and the Neoplatonic theme of procession and return: all things flow out from God and return to God; the worshipping soul turns to God in prayer and returns into the world. The entire liturgy echoes this ebb and flow, but specific processions give clear dramatic form to the process. The procession can be effective as symbol only if it is first effective as experienced reality. (Ibid. 2004, loc. 418 of 5791)

Durandus concurs when describing the dedication of a church,

> But whatever things be here done visibly, the same doth God work by His invisible power in the soul, which is the true Temple of God: (Durandus 1893, p. 283)

Kieckhefer grants that,

> If there is a clear distinction between the central and longitudinal plans it is not in their spatial dynamics but in their symbolic resonance: the use of the dome in the central plan creates a vertical axis, complementary to the horizontal axis, symbolizing the conjunction of heaven and earth. (Kieckhefer, 2004, loc. 680 of 5791)

To Doig (2016), in *Liturgy and Architecture*, 'the architecture becomes sacramental space, the permanent manifestation of the liturgy, and more than that, heaven on earth', and of Hagia Sophia he writes, 'The ceremonial continued to

be the earthly reflection of the angelic, heavenly worship ...' (p. 76). On the other hand, Bergmann (2017) in his essay within the collection *Theology in Built Environments* shows us the perennial problem that Christianity has faced with respect to creating a sacramental architecture,

> ... the belief in the Creator's unification with humanity removes the limits of revelation of the holy. Instead they (the early Christians) emphasize God's ubiquity, his/her being and acting in all places. The border between the enclosure of the holy and the openness of the created becomes as transparent as the border between liturgy and social practices and diaconia. The liturgy is followed by diaconia, which Orthodox theologians today call "the liturgy after the liturgy". (Bergmann 2017 p. 288)

The Byzantine church responds to this perennial problem by being a conceptual 'typos' rather than an individual instance. As with Foucault's second similitude of *emulatio,* the visible symbol experienced with the senses, refers beyond its tangible existence to its archetype as an idea in the *noetic* realm, and can be repeated in the world as many instances of the same tangible 'typos'.[54] Today, its sacramental space retains the ceremonial dynamic of the original basilica church since the altar remains the focus on the horizontal axis, while the design of the whole space adds an architectural focus on the square *naos* in the centre of the church, and the *synaxis* gather within its central space like the modern communal church. In this sense it can be read as a sacramental church with a dialogue between the horizontal and vertical axes, which is an important feature for my methodology (see Figs. 9, 10).

A particular quality for which I have chosen a domed masonry church as a case study is that the dome can highlight whichever ritual sacrament comes into its focus, creating a dialogue between ritual and architecture, much as the icons and liturgy dialogue (see Figs. 8-10). Furthermore, beyond its visibly perceptible centre at the apex of the dome, it has an invisible centre within the dome. Though invisible, this centre at the heart of the dome is inferred through all the senses; through the echo of sound by hearing, through geometry and light by sight, through air movement by touch and scent. The movements through the space of the dome provide moments of congruence between the transitory ritual forms and sensory impressions of the church suggesting layers of space beyond what is obvious in the phenomenon called *chora*, space. Therefore my choice of Hagia Sophia, Thessaloniki depends firstly on this domed 'house of God' being an active participant in liturgical movement, as a work of architecture. Secondly, as a sacramental cathedral with a spatial dynamic and active liturgical meanings,

54. See Glossary for symbol.

FIGs. 20-24, visits to the upper galleries of Hagia Sophia, and up above the great arches. All Photos by author.

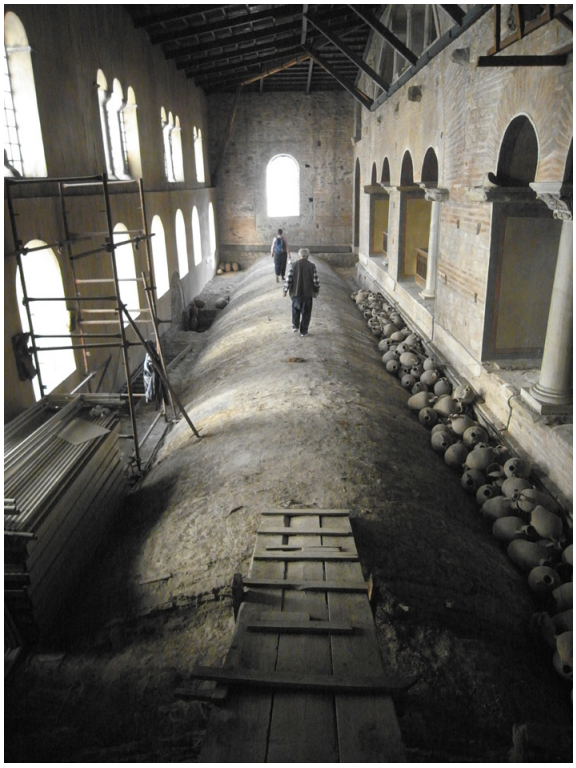


FIG. 20 Above left: The upper gallery level above the vaulted side aisles. The floors were removed after the 1986 earthquake exposing the details of the brick construction techniques. The vaults and domes show no signs of damage, demonstrating the stability of base-isolated compression shell masonry structures.



FIG. 21 Above right: Temporary steps from the upper gallery up to the top of the great arches, and then to the original stone stairs for ascending the base of the dome.

FIG. 22 Below: Above the narthex domes.



FIG. 23 Below: Theology Prof. Giorgios Fousteris and Archaeologist Elena Costic.

FIG. 24 Bottom: Architect Ploutarchos Theoharidou, Architecture Prof. Giorgios Velenis, Archaeologist E. Costic.





one can transfer the known aspects of *theoria* and *mystagogia* by analogy onto its masonry methods.

These are the primary reasons for choosing Hagia Sophia, Thessaloniki as a case study to research the relationship of theology and architecture. Here, the architecture is a significant partner to the liturgy and iconography.

The domed church allows a person to inhabit the spatial figure of analogy, whether they are participating in the liturgy or simply visiting to light a candle, kiss an icon (*proskynesis*, reverence), or spend time in contemplation. It enables a physical experience of Foucault's four similitudes of *convenientia, emulatio*, analogy which combines them, and sympathy through the unity of opposites such as structural tension and compression, light and shade, inner and outer. It immerses the faithful in Dorotheos of Gaza's radial paths of the saints, where loving God and loving one's neighbour draw a person ever closer to that central place. The dome generously withraws itself to make a space called *chora* through which, in Nicoletta Isar's breath-taking work *Chora: Tracing the Presence*, passes the 'inscription (graphe) .... which makes visible the limitless Word (apreigraptos Logos).' (Isar, 2009, p. 42)[55]

The dome's space of analogy is elevated and does not give any physical person a place to stand in the central point, which remains empty. But during the liturgy a virtual, divine and collective person conceptually claims this space. The assembled *synaxis* of people stand at the lowest level of a vertical hierarchy, indicated by structural features such as cornice lines or brick bands, but the liturgical experience of theology indicates for them how to climb. In fact in Hagia Sophia, Thessaloniki, the texts of St. Symeon, its archbishop from 1416-29, tells us that the choir, as representatives of the *synaxis*, did physically ascend to the upper galleries, then further up onto the balcony within the dome, and even further up on the outside of the dome to the apex during the feast of the cross.[56] The masons, of course, ascended to the apex of the dome during construction. This architectural vertical hierarchy can be compared to that chain stretched between heaven and earth, taut at each end, which runs through the centre of the space of analogy. At the apex of the dome, its visible centre, there was intially a mosaic of a radiant cross, or *chi-ro* (see Fig. 5). Today there is an iconic mosaic of Christ in ascension (*analipsis*) (see Fig. 6), and no image at the invisible centre of the dome's form. In this thesis, I aim to research these qualities of the dome,

55. See Isar, N. (2009) '**Chôra: Tracing the Presence**' *Review of European Studies* 1:1 pp. 39-55

56. Patriarch Germanos in his Historia Mystagogia, Point No. 7, connects the cornices and the cross thus, *'The cornice (kosmites) denotes the holy order (kosmion) of the world (kosmikon), and shows the seal of the crucified Christ and God, adorned (kosmoumenon) with the cross.'* (In: Mango 1972 , p.143)

its centre and perimeter as a three dimensional inhabitable figure, mindful that circles and domes are the most ancient of all built forms.

The essential masonry dome and the problem of theorising without a comparative methodology

Masonry Architecture is the most ancient of all architecture. Circles of stalagmites have been found in a cave in south-west France dating to 176,000 years ago using uranium dating, which would mean they were composed by Neanderthals.[57] The remains of a village of circular stone walls have been found in Maputo, South Africa that have been tentatively dated to around 200,000 years ago.[58] The many oval shaped rooms with carvings at Gobekli Tepe in Eastern Turkey are dated to 10,000-8,000 BC, their dry stone walls laid by hand were possibly aligned to mirror the movement of planets in orbit and may have been partly domed over (see Fig. 12).[59] The Neolithic 'village' cluster of circular stone rooms thought to be domed, has been unearthed at Khirokitia (*chi-ro-kitia*) in Cyprus dated 7,000 - 6,000 BC (see Figs. 15-16).[60] A dramatic example is Stone Henge in England which dates to the 3rd millenium BC (see Fig. 11).

The earliest masonry structures pre-date writing, and all define the figure of a centre and a circular perimeter. Archaeological remains indicate ritual spaces, rather than residences imitating caves. The question is why would anyone decide to pile up heavy stones when the cave is nearby, and comfortable dwellings can be made from branches and grasses imitating birds and animals? Is this seemingly unnecessary, entirely human behaviour because the human hand, participating in the creation of this kind of geometrical space that could echo like a cave, was drawn to build as a ritual? Perhaps archaeologists should be looking for building rituals rather than spaces built to house rituals.

Masonry structures built with earthen arches, domes, vaults, and apses, became ubiqitous for a range of building types and infrastructure centred in

57. See Drake, N. (2016) 'Neanderthals Built Mysterious Stone Circles: Rings of stalagmites found in a cave in France suggest that our ancient relatives were surprisingly skilled builders.' In: *National Geographic Magazine*, first published 25-05-2016, Accessed from: https://www.nationalgeographic.com/science/article/neanderthals-caves-rings-building-france-archaeology

58. Bradfield, L. (2019) '200 000 year old city found in Southern Africa may rewrite history' In: *The South African*, first published 29-04-2019, Accessed from: https://www.thesouthafrican.com/opinion/200-000-year-old-city-found-in-southern-africa-set-to-re-write-history/

59. Curry, A. (2016) 'World's Oldest Temple to Be Restored: The ancient site of Göbekli Tepe in Turkey has rewritten the early history of civilization.' In: *National Geographic Magazine*, first published 01-20-2016, Accessed from: https://www.nationalgeographic.com/travel/article/150120-gobekli-tepe-oldest-monument-turkey-archaeology

60. See Unesco World Heritage Centre, The List, Choirokitia, Accessed from: https://whc.unesco.org/en/list/848/

Mesopotamia from before 2,000 BC. Pitched brick vaults built with unsupported masonry seem to be well developed already by 2,000 BC in the Mesopotamian archaeological site of Tel al-Rimah close to Nineveh (see Fig. 13).[61] Within the historical period, domed masonry structures that have the figure of centre and perimeter, have been used in a wide range of round temples, stupas, and simple houses, globally. In the near East and Europe there have been tombs and mausoleums such as the Treasury of Atreus (circa 1250 BC), temples and palaces, baths and baptistries, martyria, and also small models such as the conoid *Bayt-El* of the Hebrews, and the dome-shaped *Omphalos* of the Greeks.[62]

Vertically layered construction gives a three dimensional form to the ladder of Jacob's dream on which 'the angels were ascending and descending'. In the Biblical story Jacob had laid a stone at the place where he dreamt and called it *Bayt-El*, the 'House of God'.[63] Jacob's dream took place in the region of biblical Haran, founded in the sixth millenium BC, which was a mere ten and a half hours walk from the stone circles of Gobekli Tepe, a nine hour walk to Urfa/Edessa the site of another important Hagia Sophia, and less than a day's walk from the Tigris and the Euphrates rivers to the east and west.[64] Even today the

61. See Kawami (1982, p. 63) *'However, the origins of the pitched brick vault appear to be Mesopotamian rather than Iranian. The British excavations at Tell-al-Rimah, northwest of Nineveh, have amply documented the building form. One of the most remarkeable examples, from a technical point of view, is the structure of unknown purpose on the southwest side of the mound. Dated about 2,000 BC, the building is formed by at least two tiers of pitched vaults. [...] The complex pitched brick vaults of Tell al-Rimah suggested to the excavator, David Oats, that the technique had been developed much earlier.'*

62. A section of Baldwin-Smith's book *The Dome* (1971, pp. 71-74) is dedicated to; *'The Conoid Baetyls and the Ancestral House Concept as a Manifestation of Divinity'* . It contains interesting information on the ancient Hebrew 'Bayt-El' and the belief in the domical house of God in the Near East and Mesopotamia. Also, Ibid. (pp. 75-77) concerning the Greek concept of the Omphalos, as marked by the round domical stone at Delphi, and its relationship with the near eastern 'conoid baetyl'.

63. cf. Lidov, (2015, pp. 62-63)

64. Haran, which was written as Carrhae by the Romans, gave a final home to the Athenian school of philosophy after the emperor Justinian officially closed it in 529 AD, according to Algis Uzdavinys in Philosophy and Theurgy in Late Antiquity *'The very name of Damascius (c. 462–c. 537 C.E.) suggests his likely Syrian roots. He was the last official successor (diadochos) of the Platonic School (or Academy) in Athens before it was summarily closed in 529 C.E. (at least as a public institution) by the edict of Justinian, the Byzantine Christian Emperor, who prohibited the teaching of Hellenic philosophy. Thereafter Damascius, along with other devoted Neoplatonists (Simplicius among them) departed for Persia, or rather Mesopotamia, in hope of establishing the Platonic Academy in Ctesiphon, the capital of the Persian Sassanid Empire. Three years later they left the court of Shah Khusro I Anushirwan and perhaps settled in the North Mesopotamian town of Harran, where Damascius set up the Academy and where Simplicius wrote his Aristotelian commentaries. If this hypothesis is correct, the Sabians of Harran, who survived well into Islamic times and influenced the philosophy and science of the Abbasid dynasty, may be regarded (at least partly) as the descendants and heirs of these Neoplatonists and other Pagan intellectual refugees from all over the Empire. In any case, it is well established that the School of Harran played a crucial role in the transmission of Hellenic theology, philosophy, theurgy—as well as certain Hermetic doctrines—to the Arab world.'* (Uzdavinys 2004, loc. 312 of 7731)

art of building domes with earthen blocks is continued in Harran (Carrhae), evidenced by the photo of my recent visit (see Fig. 14). Though the metaphor of Jacob's ladder after St. John Climacus was more likely to be depicted in Byzantine icons as simple opposition between anagogy to heaven and fall into hell, the original sense of the ladder as enabling a unifying two-way connection between the ineffable God and the sensory earth was not lost in Christian iconography. In 11-12th century Sicily the Byzantine mosaics depicting Jacob's dream with its 2-way ladder, are placed alongside the carpentry construction of Noah's ark with creatures ascending and descending by ladder, and the masonry construction of the Tower of Babel replete with the builders' ladder and scaffold.[65]

It would not be unreasonable to infer a monotheistic theology from these forms: one that asks how to describe a single origin, a unitary principle, in terms of the diversity and multiplicity of creation, without equating it with any part of creation, nor divorcing it from creation, nor allowing that anything other than it has formed creation. After all, the early Christians gave a sign for their theology as the figure of a single point marked by a cross or a *chi-ro*, which is conceptually beyond its materiality, and which generates a circumference, in which every part relates to the point of origin, where the lines cross and converge. The circumference "circumscribes" the point and depends on it. The point is independent and immaterial because the One God is beyond any expression. The only way to know that there is a single point is because the entire circumference refers back to it and creation returns to its origin. In this way we can see the theology of Maximos the Confessor in action.

What makes such an inference challenging to research is the mute nature of architecture. It communicates through all the senses of the inhabitant, but not through words. It becomes impossible to directly claim a conscious connection between architecture and theology. Even to argue the connection between the masonry architecture of the domed Byzantine church and the theology of Dionysios would be difficult without a context that offers multiple points of comparison and cross-referencing with which to confirm one's theories.

The comparative categories of liturgy, iconography, and architecture

To this end I sought out an exemplary Byzantine cross-domed church of the formative period of Christian theology, demanding that it also be liturgically active with a typical iconography. This was not easy to find because all except one cross-domed church from this period are either operating as mosques,

65. The mosaics to which this refers are in the Cathedral of Monreale and the Capella Palatina, Palazzo Normanni, in Palermo, Sicily.

museums, destroyed, or fallen into ruins. The only active example from those formative early centuries is Hagia Sophia, Thessaloniki (see Figs. 17-19). My methodology in this cathedral church employs cross-referencing between the liturgy, iconography, and architecture, which have retained the essential parts of their 7-9th century features. Compared with other churches in the city, she has attracted only the most dedicated and specialised scholars who see her worth as a UNESCO listed monument. And yet, because my choice emerged from a process of logical selection, it has yielded many fruits with this comparative methodology.

Firstly, my primary textual source for the connection between liturgy, the synaxis, and the building, is Maximos the Confessor's *Mystagogia*, for whom the *ekklisia* is an image (*eikon*) and type (*typos*) of God; of Christ; of the soul; of the world of seen and unseen; and of the world of the senses. Hagia Sophia, Thessaloniki was constructed well after the Eucharist ritual had been established. It was also well after the sacramental status of the ritual things of the liturgy, like incense, candles, bread and wine had been included in Dionysios' *Ecclesiastical Hierarchy*. This allows me to make the necessary comparisons between theology and the church as a sacramental space.[66]

Secondly, the church was constructed during the iconoclastic era, and the original mosaic decoration of the cathedral was non-figurative. Its earliest completion is given as 690 AD and the latest as 840 AD;[67] little is known about its early history, until the 14th century St. Gregory Palamas and 15th century St. Symeon became its archbishops. During the years of iconoclasm an intense debate was conducted about the part that figurative imagery would be allowed to play in religion. The iconoclast Emperor Constantine V, who ascended to the throne in 741 AD, issued his second argument (*peusis)* to the ecumenical council debate about icons saying that "the Eucharist can be regarded as an image of Christ's body, as 'the form of his body'", and that "the bread that we recieve is an image of His body, it depicts His flesh, and it is a *typos* of His body".[68] Foucault's second similitude of *aemulatio* comes to mind here.

The Emperor seems to be saying that intention is key to its mystagogy, and

66. Sacramental aspects of the church building are also addressed in some the passages of the *Historia Ekklesiastike kai Mystike Theoria*, a liturgical commentary attributed to Germanos I, patriarch of Constantinople (d. 730).

67. Theoharidou (1988) uses dendrochronology for the date of 690 AD, and Velenis (1978) derives his date of 840 AD from the end of iconoclasm.

68. see Tollefsen (2018, Ch. 4, p. 125 ff.), "The True Image or the Idol of Deceit) "We have several times touched upon the concept of the true image that was central to the iconoclast argument. This concept played an important role both in the co-called Peuseis (Πευσέις) of Constantine V and in the Definition of the Iconoclast Council of 754"

that the ritual things of the liturgy are an "unlike image", of the sort preferred by Dionysios.[69] The debate was less about whether to use an image or likeness, and more about *how* the image should denote likeness. Whether the likeness should be of the same substance (*homo-ousios*) or of a similar substance (*homoio-ousios*) was important, and in a more subtle way the same question continued on in the medieval debates about the distinctions between the analogy of proportionality, analogy of attribution (prior and posterior analogy), and indeterminate analogy.

In 842 AD the rulings of the Orthodox ecumenical council included the visual icon in a theology that professed God to be *homo-ousios,* of the same substance as the circumscribed.[70] Their general attitude was to regard all of the created world as holy as well as circumscribed, and their architecture was no exception.[71] That the masonry church of Hagia Sophia was constructed during this debate is significant for this thesis; it indicates to me that the church architecture was also thought of as a symbolic image, but an 'unlike image', and of the same substance as God. One is invited to enter theological architecture through the 'meditation upon matter' that the philosopher of science Gaston Bachelard advocates in his poetics.[72] This gives one confidence that the masonry architecture provided a path to *henosis* (Unity) through the 'unlike image'. It suggests to me that this case study church belonged to a tradition which regarded its architecture as an expression of its theology, independently of iconography. Iconography, which was developing before iconoclasm and was refined through the iconoclastic debates, and then added onto the architecture in the 9th century as soon as iconoclasm ended, more or less as an explanatory notation for something that was already there in the building. I consider both categories as an extension of the theology of the time, one as a visual notation and the other

69. See the Heavenly Hierarchies Ch I; also the Mystagogia, *'... they who abstract, with regard to that which is above every abstraction, should make the abstraction from things which are further removed from it.'* (Dionysios 1897, MT, III, 1, Trans. Parker)

70. The Nicene creed professes that the son is *omoousios* to the father, "begotten not created", which concerns the *method* of creation and makes *mystagogia* as a essential experiential component of theology.

71. The circumscription of the transcendent in the immanent world of materials and forms was expressed theologically by the 'Theotokos' (God-bearer) in whose womb the child Christ was circumscribed. A reference to this concept of Byzantine theology can be found in the mosaic above the entrance to the late 13th century domed church of the Church of the Holy Saviour in Chora, Constantinople. The mosaic of the Theotokos 'orans' (holy mother and child) has the inscription 'chora tou achorytou' (container of the uncontainable) above it. The building is the container of the divine presence in the space that is uncontainable. Therefore one concludes that the walls on which she is depicted are an analogy for the womb that circumscibes and "gives birth to" the human image of God. Byzantine theological architecture seeks to circumscribe the uncircumbscribable and make a place (chora, logos) for the indwellng God.

72. See Bachelard (1999, ER p.2). Bachelard's original work in French is L'Eau et les rêves: Essai sur l'imagination de la matière (Paris: José Corti, 1942)

as a tangible, physical one. The hierarchies that are the basis of the distribution of visual symbols in the icons can then be closely linked to the tangible parts of this church of Hagia Sophia, Thessaloniki.

Experience as a vital part of my methodology and contribution to knowledge

It is though 'doing' that my contribution to knowledge, in this process of connecting these diverse areas, is intimately linked to my methodology. It is though the mason's *orthopraxy* that the disciplines of Liturgy, Iconography and Architecture are compared by analogy. The methodology does its work through the person who experiences. We can call this person the maker or the poet, the faithful or the intitate on the ladder of early Christian mystagogy.[73] To put this methodology into practice it is essential to approach as far as possible the Byzantine way of seeing and understanding, and doing. The cathedral church of Hagia Sophia, Thessaloniki is the perfect place to compare its liturgy, iconography, and masonry architecture, because the researcher can actually experience all three in person. It allows one to include the essential experiential component of theology, into this research.[74]

In addition to the scholarship on which this thesis will rely, the selected texts were also studied through the living experience of the liturgy, iconography, and the building itself.[75] Naturally this takes place through the living lense of the author's own person which has a limited human capacity. Consequently, this thesis is written in the spirit of opening a conversation; not of offering a definitive method but of setting down some reasonable possibilities. The author's 'lense' as a qualified professional architect, has been polished by over 25

73. The greek word poesis, meaning 'making' or 'doing', was applied to a diversity of creative disciplines such as verbal poetry, theatre, sculpture, architecture and building crafts, visual arts and crafts, and even to cooking, building a fire, gardening and so on.

74. My methodology entrains the senses in this research, taking its cue from Dionysios to put them in the service of the divine.

75. My visits to this cathedral yielded the insights of the following chapters. I participated in the liturgy on many occasions, and attended a baptism and a memorial after death. Many hours, day after day, were spent meditating quietly on the building inside and outside. I was able, on three separate arranged visits, to go up into the upper galleries, above the domes and vaults of the narthex and side galleries, to examine their construction and to view the space of the church as it would have been seen when the galleries were used (see Figs. 20-24). Further up, I was able ascend to the tops of the four tall vaults and the drum at the base of the dome that would have been originally exterior surfaces. An original tiny stone stair led to the summit of the building, though access to the exterior of the main dome was closed. For this special access I am indebted to E. Costic, and G. Fousteris. In many solitary walks to visit the adjacent late Roman and early Christian buildings, I experienced the building it in its urban context. During these visits I was able to converse with those few persons who have already researched the material archaeology and architecture of this little-studied, and well-attended church. In this way my fieldwork experience was combined with my research into the primary texts relating to the concept of Hagia Sophia and the theology of the time.

years of physically building uncentered masonry arches, domes, and vaults.[76] In liturgy and iconography, however, the lense has the limited capacity of a participant, raised in an Orthodox Christian family, yet never painted an icon or officiated as a priest. In all three disciplines the author's relies on others who have had this experience, but most especially in iconography and liturgy.

Summary of the thesis aims

In this thesis I want to argue that masonry architecture is linked to theology in its aspect of *praxis*, which connects method and analogy, *mystagogia* and *theoria*. The simple actions of building with masonry arches, vaults, and domes contain a mystagogic method that can guide the builder in his or her relationship with God. I want to show how these can be understood as more than a set of practical construction methods but as connected with the *praxis* of theology, just as there is an *orthopraxy* in the liturgical ritual and in visual iconography. At the same time I will argue that the product of the mason's mystagogic method, the masonry architecture is itself the record of a theology that connects God and the earthly creation, in which the human being is a vital part.[77]

I will argue that masonry's process and its finished product can transmit the messages of theology in an orderly and very tangible way, by analogy, through all the senses.[78] The method and the product are not seperate. As Dionysios observes,

> It is necessary to ask how we know God, who is neither intelligible nor sensible [οὐδὲ νοητὸν οὐδὲ αἰσθητὸν] not any of beings whatsoever (DN VII.3, 869C)

'How we know God', for the masons, is the anagogic method of building. How God makes himself known is the building itself as the place where 'the heavenly God dwells and walks'; the structure of Hagia Sophia describes the descent of the ineffable into the 'earth' of the congregation within its space.[79]

76. My examination of the physical building inside and out, in the following chapters, has been informed by my personal experience of an over twenty-five years journey from apprentice to master-builder in 'Earth Architecture'. Though I had graduated as an architect, I chose to work physically in this specialist area of masonry to learn to build unsupported masonry domes, vaults, apses and arches, mostly using unprocessed earth, earth stabilised with a small amount of lime or cement, and bricks.

77. These very ancient building methods are still practiced today and the modern mason is aware of their effect on him, although not able to articulate his ancient relationship with theology.

78. My personal experience with masonry methods, from how to guide a team to a practical understanding of the materials and methods, fed into the research. To confirm if my personal experience matched that of more traditional masons, I have interviewed several experienced masons, some from the ancient, traditional guilds (bouloukia) in Greece and some who carry on the Roman tradition in Spain (Catalan masons). Some of the interviews are transcribed in the Appendices.

79. This structure is found in all the *ekphraseis*, and in the writings of the theologians, but is

1.4 THE STRUCTURE OF THIS THESIS RELATIVE TO EXISTING SCHOLARSHIP

Chapter 1: Introduction to my subject and research questions, my approach and methodology

This introduction thus far asks the question of how architecture expresses theology; my approach is through the theologies of Dionysios the Arepoagite and Maximos the Confessor; my methodology through the living entity of Hagia Sophia, Thessaloniki as the 'Rosetta stone' of this thesis because its synchronous architecture, iconography, liturgy, within a community, provide points of translation (*ekphrasis*) between its architecture and theology. *Theoria* and *mystagogia* are compared with analogy and method. The need to combine method with analogy is demonstrated in contemporary philosophy and orthodox theology. The art of making as *acheiropoeiton* (a work made without hands) is introduced, as is *anenergesia* (doing while not doing).

The rest of this chapter positions my case study research in existing literature about Hagia Sophia and her context, while introducing my thesis structure chapter by chapter. The scholarship related to Hagia Sophia's three disciplines of masonry architecture, iconography and liturgy, is introduced according to the chapter in which it occurs. Aspects of current scholarship about Hagia Sophia, Thessaloniki are essential to inferring a possible *theoria* and *mystagogia* for building with masonry materials and methods.

Chapter 2: Hagia Sophia's Conceptual Design

This chapter researches Hagia Sophia Thessaloniki's conceptual design, so as to position this case study before starting the detailed study of Chapters 3-5. The following aspects are considered: the formal development and construction; the architect and client's conceptual design; the architect's education; the methods of conceptualising the design for construction; the theoretical aesthetics; communication systems for conceptual design (through iconic images and words in ekphrasis); formal figures in theology.

Hagia Sophia's relationship to the formal development and construction of a number of churches, both standing and ruined, from the Transitional period of 6th-9th century is considered. The relationship between Hagia Eirene in Constantinople, Cumanin Camii in Antalya, the Lower Church in Amorium, St. Mary and St. John the Theologian in Ephesos, 'Building D' at Sardis, St. John

exceptionally conscise and clear in the 6th century *Sougitha* hymn to Hagia Sophia in Edessa.

at Philadelphia, the basilicas of Hierapolis, St. Nicholas of Myra, St. Clement of Akara, Hagia Sophia in Vize (Bizye) and Hagia Sophia in Thessaloniki has been studied by scholars whose research is essential to grounding the propositions of this thesis in its historical context. Of these scholars of the 20th and 21st century, Cyril Mango employs an erudite knowledge of the period's history and artifacts;[80] Robert Ousterhout's detailed knowledge of construction situates them in the historical context of iconoclasm, war, and natural disasters;[81] and Richard Krauheimer's knowledge of Byzantine buildings is encyclopaediac.[82] Analysing signficant patterns of formal development in the Transitional period are scholars such as Buchwald, Feist, and Karydis. They show how the domed and cross-domed churches in Asia Minor and Thrace, literally emerged from within earlier basilican churches as part of their tradition and as part of them physically. Knowing the economic basis of their production and their building materials, Hans Buchwald proposes a 'mass production' economy and systematisation of design already in place, as well as a culture of innovation during the transitional period. He draws his conclusions by comparing the physical buildings and their methods of construction, and he positions Hagia Sophia in Thessaloniki in the late 8th century, as a fruit of this formal pattern of development, and the furthest west.[83] Archaeologist G. De Jerphanion has inferred the design

80. See Mango, C. (1985) ***Byzantine Architecture***. London: Electa, Rizzoli, and Mango, C. (1968) '**The Byzantine Church at Bizye (Vize) and St. Mary the Younger.**' *ZRVI 11*, 9-13, Belgrade: Zbornik Radova Vizantološkog Instituta.
Though Cyril Mango began his career as a historian of Byzantine art and culture a generation or two earlier than contemporary scholars, his work has remained relevant and in agreement, or at least not in contradiction with, the latest research on the Transitional churches to which he devotes a chapter in Byzantine architecture, and an entire monograph to Hagia Sophia in Vize.

81. See Ousterhout, R. (2019) ***Eastern medieval architecture: The Building Traditions of Byzantium and Neighbouring Lands***. Oxford: Oxford Univeristy Press, and Ousterhout, R. (2001) ***'The Architecture of Iconoclasm: The Buildings'*** In: Brubaker, L. & Haldon, J. Byzantium in the Iconoclast Era (ca 650-850): The Sources. An annotated survey. Aldershot: Ashgate. Though Ousterhout's focus is always on architecture, he consistently juxtaposes its historical context to bring arguments counter to accepted norms. For example, his observations on the image of a church being applied in paint as an icon on the rock carved churches of Cappadocia, or the large number of church restoration projects carried out in the mid-eight century during the time of the iconoclast emperor Constantine V whose writings and other works were postumously erased and vilified.

82. See Krautheimer, R. (1986) ***Early Christian and Byzantine Architecture*** 4th edn. Krautheimer, R. and Curcic, S. eds. New Haven and London: Yale University Press. Krautheimer's book is still one of the most comprehensive reference books on Byzantine buildings. In this 4th edition he promoted his younger co-editor, foreseeing the immense influence that Slobodan Curcic's work would have of the history of Byzantine art and architecture.

83. See Buchwald, H. (1999) ***Form, style, and meaning in Byzantine church architecture***. Aldershot: Ashgate Variorum, for his view on the architecture relative to cost, changes in society and laws, systems of proportion, design, innovation and production. Rather than accept the assumptions about a break in tradition between the basilica and the domed church, Buchwald analyses each of them architecturally and suggests ways in which the builders continued one from the other, especially through his study of the means of design and production for basilicas. By so doing he in fact sets up the parameters with which he can compare the domed

of St. Clement of Ankara from ruined fragments, comparing it with the ruined church of the Dormition (Koimesis) at Nicaea; U. Peschlow has dechiphered the many layers of Hagia Eirene's construction, re-modelling, and re-constructions in his monograph.[84] Both the latter employ a great erudition of the historical period as well as a detailed knowledge of its buildings to clarify the emergence of the domed church from the basilican tradition.

Additionally, Hagia Sophia's design features have been specifically examined by two architects from Thessaloniki. Georgios Velenis (2003), who positions Hagia Sophia in her context within the architecture of the city and the region in the *Middle Byzantine Churches of Thessaloniki*.[85] Kalliope Theoharidou (1988) was present at the excavations of M. Kalligas after the 1986 earthquake in her native Thessaloniki. Her monograph on Hagia Sophia, contains the most accurate survey of the existing church to date, which is still a reference for scholars today.[86]

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architecture and be precise about the changes in aesthetics that did occur particularly from the 6th century. This in turn enables research that understands the changes relative to theological aesthetics.

84. See Jerphanion, G. de (1928) **'L'Eglise do Saint Clement a Angora'** *Melanges D'Archaeologie Anatolienne* Beirut: Imprimerie Catholique, whose forensic reconstruction of St. Clement in the 1930s was ground-breaking in his time not only for his conclusions but also for his research methods..

Peschlow, Urs. Von (1977) ***Die Irenenkirche in Istanbul: Untersuchungen zur Architektur***, Tubingen: Verlag Ernst Wasmuth. Though the author of this thesis struggles to decipher book-length texts in German, it is clear from a partial reading that Peschlow's choice of this church enables a unique comparison of several design and construction phases in one building. Though deciphering its multiple construction phases was clearly complex, its imperial character allows us to think that at least parts of its re-modelling were based on imperial will rather than absolute necessity. The church therefore exemplifies a conscious re-modelling of basilican churches with an ideological basis.

85. See Velenis, G. (2003) ***Middle Byzantine Churches of Thessaloniki***. Athens: Academy of Athens, Research Centre for Byzantine and Post-Byzantine Art. In this slim volume Velenis finds connections between the churches of Thessaloniki through the details of construction, piecing together a history from the construction techniques and architectural design. He never jumps to any conclusions but methodically works through all the built details, with logic and knowledge of how they were done.

Velenis, G. (1997) '**Chronology of the church of Hagia Sophia in Thessaloniki through the epigraphic data' [Η χρονολόγηση του ναού της Αγίας Σοφίας Θεσσαλονίκης μεσα από τα επιγραφικά δεδομένα**] In: *City of the Thessalonikans, texts and sources of 6,000 years,* Thessaloniki: City of Thessloniki [Council]. His discussion of Hagia Sophia's mosaics and their epigraphy narrows down the dates of construction, with the open-mind of a scientist and the subject matter of a historian.

86. Theocharidou, C. (1988) ***The Architecture of Hagia Sophia, Thessaloniki: from its erection up to the Turkish conquest***. Oxford: BAR International Series E. and

Theocharidou, K. (1994) The Architecture of Hagia Sophia, Thessaloniki: from its erection up to the Turkish conquest [***Η Αρχιτεκτονική του Ναού της Αγίας Σοφίας στην Θεσσαλονίκη απο την ίδρυση του μέχρι σήμερα***]. Athens: Ministry of Culture, Tameio Archaeologikon Poron kai Apallotrioseon. In this thesis I have used both versions of this text, which was her doctoral thesis, one in Greek and the other in English. The Greek version contains her survey drawings. Both drawings and archeological information are extremely thorough, although the conclusions

Perhaps most pertinent to this thesis, Nikolaos Karydis applies knowledge of the construction techniques to forensically reconstruct several Transitional churches in Asia Minor from remaining fragments.[87] Karydis' (2019) detects and deciphers the layers of re-building and re-modelling of St. Mary of Ephesos to reveal how the basilica transformed over the centuries into a domed and cross-domed series of churches. His conclusions note the similarity with Hagia Sophia Thessaloniki. Most recently, Sabine Feist's (2019) *Die Byzantinische Sakralarchitektur der Dunklen Jahrhunderte*, monograph of transitional churches in Asia Minor and Thrace, draws on her detailed knowledge of their architectural detail to include Hagia Sophia, Thessaloniki, in Macedonia. Her proposition that the new church of Hagia Sophia was built within the old basilica when it was still standing fits well with both textual and structural evidence.[88]

The common thread in all the above scholarship is a formal pattern of converting basilican churches into a domed and cross-domed churches in Asia Minor, resulting in shared forms and features. This was done systematically, with masonry replacing timber construction, relative to construction methods and geometric formulas, as well as other influences. Some of the major design features that Hagia Sophia in Thessaloniki has in common with other transitional re-modellings are noted for discussion later in the thesis.

When a formal pattern is repeated enough times it should merit being considered a conceptual design; a conceptual church that is transferable, scaleable, repeatable, and adaptable to local conditions. Hagia Sophia's sharing in the conceptual architecture of the cross-domed churches as a living church, with active

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she draws have been adjusted over recent years, relative to other branches of knowledge.

87. See Karydis, N. (2011) ***Early Byzantine vaulted construction in churches of the western coastal plains and river valleys of Asia Minor.*** Oxford : Archaeopress. Karydis reconstructs the churches of St. Mary and St. John in Ephesos, building D at Sardis, St. John at Philadelphia, and the Vaulted Baslicas of Hierapolis, Priene and Pythagorion, providing us with a *'convincing reconstruction of the original forms and detailed analyses of the construction techniques'* (ibid. p. 3). For St. Mary of Ephesos he detects how *'the two parts of the church proper, a domed church and a pillared basilica, coexisted at some point, forming a composite building.'* (ibid. p. 5)

Karydis, N. (2019) **'The development of the Church of St Mary at Ephesos from late antiquity to the Dark Ages.'** *Anatolian Studies*, 69 . pp. 175-194. This is a more in-depth presentation of the church of St. Mary, in its many stages of development that relate the basilica to a cross-domed core.

88. See Feist, S. (2019) ***Die Byzantinische Sakralarchitektur der Dunklen Jahrhunderte***. Germany: Reichert Verlag Wiesbaden. She devotes an entire chapter to Hagia Sophia, Thessaloniki comparing the archaeological evidence of the cathedral with texts such as the liturgical descriptions of Symeon of Thessaloniki to challenge the scenario of an earthquake damaging the basilica and making a new church necessary. She provides convincing evidence for other scenarios such as a conscious decision to build the new church, in the middle of the old one while it was still standing. She does not go quite as far as proposing a conscious ideological change, or the need to establish Thessaloniki as the second city of the Empire with its own Hagia Sophia, though this is essentially what happened.

liturgy and original mosaic iconography, significantly helps this thesis to cross reference physical features to a conceptual church.

The chapter goes on to examine the transmission of a conceptual architecture in the transitional period.[89] G. Downey's research provides a scholarly view and the education of the architect, through texts and epigraphy of the Late Roman and Byzantine period.[90] Similarly, E. Zanini describes the respective roles of client and architect.[91] They raise the issues of the continuity of the architect's role to which this chapter responds. The changes in the culture of client and architect (*architekton*) are considered relative to the conceptual church in a theocratic culture. Mango's focus on history through documents that reveal everyday life highlights the power of the church with its theological mandate as client.[92] Matthews' article on palace churches considers the role of the imperial client in promoting the concept of the domed church, from the view that the religious and political culture must have interfaced with the technical culture of construction.[93]

How the Byzantine architect communicated a conceptual church design to his client and to the builder of the 8th century is also reviewed, whether there were drawings or models, whether through conceptual imagination, the line of

89. The conceptual architecture was disseminated through the mass media of the time: architecture, imagery (in mosaics, wall painting, and sculpture), and the word, written in letters and treatises and performed in ekphraseis.

90. Downey, G. (1946-48) **'Byzantine Architects and their Training and Methods'**, In: *Byzantion* Vol. 18, pp. 99-118, Peeters Publishers. Downey examines the architect's culture referring to his education and the different terminologies of *mechanikos, architekton, oikodomon,* or *proto-maistor*. He describes the Byzantine architekton's simultaneous education in theoretical physics, geometry, astronomy, stereometry (theoria) and hands-on practice of construction and visual arts (praktike), with references Heron of Alexandria's manual *On Vaulting*, Pappus of Alexandria's curriculum, and others. Pappus' 3rd century Roman architectural theory included astronomy, the laws of moving bodies, the celestial bodies and their qualities and 'personalities', the philosophy Aristotle, and Euclidian geometry and vaultings.

91. See Zanini, E. (2007) **'Technology and Ideas: Architects and Master Builders in the early Byzantine World'** In: Zanini, E., Lavan, L., and Sarantis, A. eds. (2007) Technology in Transition A.D. 300-650. *Late Antique Archaeology*, Vol. 4, Leiden/Boston: Brill. Zanini provides evidence for the architect-client relationship ranging from the 'official version' in Procopius' 6th century ***De Aedeficiis*** (On Buildings) to the evidence of epigraphy from diverse cities and provinces.

92. See Mango, C. (1998) ***Byzantium: The Empire of the New Rome***. London: Orion Books. Mango provides evidence for the changing identity of the clients from the urban aristocracy to the new provincial ecclesiastical administration. In each chapter of this book he gives vignette of different aspects of daily life at this moment in history.

93. See Matthews, T. (1995) ***Art and architecture in Byzantium and Armenia***: liturgical and exegetical approaches. Aldershot: Variorum. Matthews' article on 'Architecture and Liturgy in the Earliest Palace Churches of Constantinople' looks at the circular, octagonal, and domed form in Sts. Sergius and Bacchus, St. John the Baptist church in the Hebdomon, and St. Stephen's in the Daphne Palace. He looks at their relationship with liturgy, whereby liturgical developments such as private baptisms and cornonation ceremonies coincided with the domed form and with the omphalos, which later were part of building domed cathedrals for the public.

the craftsman, the *skene,* or the verbal description in *ekphrasis*.[94] The fact that no 'architectural plans' have survived, does not mean that they were not there, but it opens a discussion that the Byzantines may have used more than drawings to communicate a design from concept through technical details to the builder. Byzantine culture frequently transmitted important information through perfomance, oral and epic literature declaimed in groups, songs and hymns, sculpture and imagery on daily objects and on their buildings, as Lidov explains.[95] Ritual actions communicated concepts that should be acted upon, and effective public policy - such as building a cathedral church - depended on the hierarchical distribution of specialised knowledge, put into practice by a clear chain of personal communication.[96] The mass media was aural, perfomative, architectural, and immersive as Lidov describes; it was not limited to audio-visual media as we predominantly are. Consensus among scholars such as Downey, Zanini, Mamaloukos, Buchwald, and Oikonomou, is that there was a system, however different to our own.

The methods of representation for the design from concept to construction are discussed with reference to Mamaloukos, who writes of scale models (referring to Buchwald), protoype churches as points of reference, geometric frameworks, hidden lines and harmonic systems of proportion.[97] `Both Mamaloukos

94. Debate exists about whether the person who designed and built Transitional churches was more like an architect or a master-builder. Consensus is growing that in the Christian East he was both.

95. See Lidov, A. (2011) **'The Byzantine World and Performative Spaces'** In: *Spatial icons. Performativity in Byzantium and Medieval Russia.* Lidov, A. ed. Moscow: Indrik
Lidov, A. (2015) **'Creating the Sacred Space: Hierotopy as a new field of cultural history'** In: *Spazi e Percorsi Sancti: I sanctuari, le vie, i corpi.* [Online] Limena: Libreria Universitaria Edizioni. The work of Lidov and colleagues like Isar and Bogdanovic explore the topos and chora of the church in conceptual ways that are multisensory and include architecture. Lidov's work crafts the personality of a 'maker of sacred space', who may be an architect, or a Master-mason, but equally well an iconographer or a bishop, a charitable donor or an emperor. This person combines dramaturgy, lighting, fragrance, music, dance, to enact a conceptual space.

96. Sometimes it when such a system of communication in a chain of command goes awry or becomes oppressive, that it can be seen most clearly. In Grabar, A. (1984) ***L'Iconoclasme Byzantin: Le Dossier Archéologique*** (2nd Ed.) Paris: Flammarion, he describes how the iconoclast emperors diverted the traditional hierarchies by interrupting the use of imagery, and by usurping it to strengthen their centralised power, for example on coinage. Conversely, in Pentcheva, B. (2006) ***Icons and power: the Mother of God in Byzantium,*** University Park, Pennsylvania: Pennsylvania State University Press, she shows how the Imagery of the Theotokos re-established the links of a system of communication and transmission of power through all levels of the society. The iconoclast Isaurian dynasty used thier centralised power to restructure the empire and repair its infrastructure, and to halt almost a hundred and fifty years of military pressure from the East. Later, the ascendancy of the iconophile Emperors brought an expansion of the arts and trade.

97. See Mamaloukos, S. (2018) **'From Design to Construction: Aspects of Implementation in Byzantine Architecture'** *Deltion of the Christian Archaeological Society,* Series 4 Vol. 39, pp. 83-98, Athens: The Christian Archaeological Society. In this article Mamaloukos presents how scholars currently see the design methods of Byzantine architects and the options that were available to them in connecting intention, design and construction.

and Oikonomou agree that masonry church structure was organised by a system of proportions which could have been learned by the architect or Master mason to envision the building.[98] The conceptual church from the maker's view and the constructional drawings of the Master mason are discussed with reference to Tim Ingold's research on *Making*.[99] How this informs the 'mason's lines' and ropes also draws upon Ousterhout's book on the *Master-Builders of Byzantium*.[100]

Central to the discussion of the architect's role is his education. According to Downey it consisted of a theoretical part (*theoria)* and hands-on work (*praktike)*. Continuity and changes in architectural *theoria* from the late Roman 3rd century education are marked. By the 7th century, the time of Maximos the Confessor, *theoria* would have been defined by the theology of the Transfiguration, according to Veniamin who explains it with reference to St. John Chrsostom and St. Maximos.[101] For the Byzantine architect a theory based on the Transfiguration translates into an aesthetics of light. It is through a theory of light that archaeologist Slobodan Ćurčić finds tangible relationships between the architecture in

98. See Oikonomou, A. (2012) **'Design and Tracing of Post-Byzantine Churches in the Florina Area, Northwestern Greece'** *Nexus Network Journal*, 14.10., Basel: Birkhauser. Oikoomou presents us with an analysis of the proportional geometry in several churches designed and built using the Byzantine methods. He detects, *'a specific construction module and certain metric models which were applied in churches of northwestern Greece, in combination with the use of constructional tracing based on the application of the Pythagorean Theorem.'* By comparison with the work of Buchwald, there is continuity in the choice of proportional systems, though the size of churches is necessarily smaller. When considered with his article, **'The Use of the Module, Metric Models, and Triangular Tracing in the Traditional Architecture of Northern Greece'** (2011), the systematisation of proportional geometry suggests that, like all traditional arts, there were 'canons', 'tones', 'maqams' in architecture, as there were in music and icons.

99. See Ingold, T. (2013) ***Making: Anthropology, Archaeology, Art and Architecture***. New York: Routledge. Ingold bases his book on his own experience of learning through doing, that he begins with *'Know for yourself'* (p.1). Along with profound observations on this principle, he also includes historical references about the practices of the architect, carpenter, and mason from early Christian to Medieval times, which he interprets through this lense.

100. See Ousterhout, R. (1999) ***Master Builders of Byzantium***. New Jersey: Princeton University Press. Ousterhout's broad historical knowedge of Byzantine architecture has filled this book with diverse research and observations of a subject that is well hidden within unrelated texts. Like many of the scholars referenced in this thesis, he excavates a territory that seems to have almost no clear record, and from multiple small fragments he pieces together a tentative picture. The value of this work, as with others like Mango, is that he dares to present the material in a certain order, or pattern, along with the lacunae, and thus generously allows other researchers to build from what he has done, or even to rearrange some pieces of the jigsaw puzzle to fit in their own contribution to the picture.

101. See Veniamin, C. (2014) ***The Orthodox Understanding of Salvation: "Theosis" in scripture and tradition***. Dalton: Mount Thabor Publishing Veniamin devotes several chapters of this book to '*Theoria*' (pp. 89-189), which broadly speaking is exemplified by the Transfiguration in the context of the Incarnation. His discussion of the disciples 'seeing God' shining from Christ's face on mount Tabor explains *theoria* through the words of the patristic theologians. By bringing together the relevant parts of Maximos' theology in the section, *'The Transfiguation of Christ and the Deification of Man in St. Maximus the Confessor'* (pp. 112-134), he presents *theoria* in 7th century words, making it very relevant to the 8th century church of Hagia Sophia.

icons and the physical architecture of the church, opening a method of translation between disciplines.[102] He explains that,

> 'Byzantine painters and builders employed a common symbolic language - expressed in media as different as mosaic, fresco painting and brick and mortar - to convey the notion of Divine Light in physical terms' (Curcic 2012, p. 308).

The research of Evangelia Hadjitryphonos and Helen Saradi, former students of Ćurčić address the potential of seeing iconographic technique as part of the design and construction process.[103] This is discussed and compared with Leonid Ouspensky's and Richard Temple's view of architecture in icons.[104] The tangible aspect of Taboric *theoria* in relation to the human body, as explained by Kallistos Ware, enables this chapter to connect the theology to the architect's process of concretising a world of pure light.[105] Veniamin explains that practices (*ascesis*) of spiritual purification were a pre-requisite to a vision of the Transfiguration, according to Maximos. How this *theoria* was incorporated into the Master mason's methods of construction (*praktike*) is further developed in Chapter 5 of this

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102. See footnote #91. Also see Ćurčić, S. (2012) **'Divine Light: Constructing the immaterial in Byzantine art and architecture.'** In: Wescoat, B. and Ousterhout, R. eds. *Architecture of the Sacred: Space, Ritual, and Experience from Classical Greece to Byzantium*. Cambridge: Cambridge University Press, and Ćurčić, S. (2011) **'Aesthetic Shifts in Late Antique Art: Abstraction, Dematerialization, and Two-Dimensionality.'** In: Lazaridou, A. ed. *Transition to Christianity: Art of Late Antiquity, 3rd–7th Century AD*. Athens: Alexander S. Onassis Foundation.

103. The essays of both Hadjitryphonos and Saradi are in, Ćurčić, S. and Hadjitryphonos, E. eds. (2010) ***Architecture as icon: perception and representation of architecture in Byzantine art.*** Princeton, NJ: Princeton University Art Museum. In the quest to find, *'the thought behind visual representations of Byzantine architecture described in texts and drawings,'* according to Hadjitryphonos, *'[...] the destruction of data and other evidence cannot be considered proof of the disruption [... of the] continuity in representation of architecture for the development of project.'* (Ćurčić and Hadjitryphonos 2010, p.145) Just because there is not much evidence of the transfer of meaning from the expressive iconic mosaics and paintings into the silent stones of the architecture, does not mean it is not there. Several of Ćurčić 's students published: Johnson, M., Ousterhout, R., and Papalexandrou, A. eds. (2012) ***Approaches to Byzantine architecture and its decoration: studies in honor of Slobodan Ćurčić.*** Farnham: Ashgate Publishing. In it they have continued to open up a discourse on many fronts, based on primary texts which are theological and devotional. For the most part their discourse has continued to use the language of scientific evidence and material archaeology. They have been somewhat less bold than Ćurčić in moving to a Byzantine epistemology. Nevertheless, these students have built upon Ćurčić's work by exploring the symbolic connections between the imagery of icons and Byzantine material civillization through primary texts of the time.

104. The writings of Leonid Ouspenky (1992) and Richard Temple (2001) briefly inform this chapter. Since their work is more significant to Chapter 4 on iconography see footnotes on pp. 56, 58, 59, 62, 63 for more descriptive attribution to these titles).
See Ouspensky, L. (1992) ***The Theology of tshe Icon***, Vol 1, New York: St. Vladimir Seminary Press. and
Temple, R. (2001) ***Icons and the Mystical Origins of Christianity***. Oxford: Luzac Oriental Ltd.

105. See Ware, K. (1997) **'My Helper and my Enemy: the body in Greek Christianity'** In: *Religion and the Body*, S. Coakley ed., Cambridge: Cambridge University Press. Ware looks at diverse aspects of the orthodox perception of the body, in which the Incarnation and particularly the Transfiguration illustrate the presence of divinity in the body.

thesis, but of necessity it must have required a *mystagogy*.[106] So on the one hand the mason, like the iconographer, could represent a theology of light in the architecture itself, on the other hand he must undertake an apprentiship to arrive at a personal vision of the aesthetic *theoria* of his time.

The open question of how the building was communicated from vision to final product is discussed with reference to Constantine of Rhodes' 10th century *ekphrasis*.[107] His reference to the *skene*, a depiction of 3-dimensions using 2-dimensions, and *skenographia* as theatrical backdrop, is the point of departure for connecting the verbal image with the conceptual design image, and its potential relationship with iconography. The chapter continues by considering the verbal performances which project the conceptual church in words to their listeners: Constantine of Rhodes' 10th century *ekphrasis* as well as those of the 6th century to the Hagia Sophias in Constantinople and Edessa.[108] Mango's translations of Procopius, Paul the Silentiary, and the Sougitha, are compiled with others such as Choricius of Gaza and a variety of relevant letters and edicts.[109] Palmer and Rodley have translated the Edessan *Sougitha* and the Constantiopolitan *Kontakion* and seek to find the design of the physical church from the conceptual one, revealing the same features that are found in the Transitional churches. McVey singles out the Syraic Hymn, 'Sougitha', referring to Hagia Sophia in Edessa, for detailed analysis in *The Domed Church as Microcosm*.[110] Through her intensely erudite and literary exploration of the symbolism, verse by verse, she reveals

106. Changes in the *praktike* are discussed in depth throughout Chapter 5.

107. See James, L. (2012) ***Constantine of Rhodes: On Constantinople and the Church of the Holy Apostles***. Farnham: Ashgate Publishing. James has provided an excellent commentary along with her translation, which is far more illuminating than her word choices in the actual translation. The thrust of Constantine's *ekphrasis* is to present iconography with gravitas and distinguished associations in the period after its official legitimization. By re-examining James' translation of certain words, this text provides a valuable picture of the architect's method of 'constructive design'.

108. See Procopius (1954) Procopius of Caesarea: ***Buildings***, LOEB Classical Library, Translated by H.B. Dewing and G. Downey. London: William Heinemann Ltd. For Procopius, I have used the LOEB translation, rather than Mango (1972). Procopius' work does not only describe Hagia Sophia in Constantinople, his eulogy of Justinian's public building works around the empire contains descriptions of dozens of churches, cities and their fortifications, and elements such as Edessa's river drainage channels. He was given the vital role of putting into words its ideological programme, as built out under Justinian and Theodora, and officially promoting it.

109. See Mango, C. ed. (1972) ***The art of the Byzantine Empire, 312-1453. Sources and documents.*** Englewood Cliffs: Prentice Hall. In this collection, large parts of the *ekphraseis* of Procopius, Paul the Silentiary, the Narratio di S. Sophia, Choricius of Gaza, and the Sougitha, are translated and put in chonological context with relevant letters and edicts. The 6th century *ekphraseis* were written at a time when the domed church was being promoted with gravitas and a connection to holiness. Cyril Mango tends to let the texts speak for themselves. Several in depth articles on the Sougitha have been studied for this thesis.

110. See McVey, K. (1983) ***The Domed Church as Microcosm: Literary Roots of an Architectural Symbol.*** Dumbarton Oaks Papers [Online], 37 (1), pp. 91-121. Available from: https://www.jstor.org/stable/1291479 [Accessed: 25 October 2018].

the conceptual domed church of the 6th century, with the main features of the Transitional churches, as a series of built stages like a ladder. Strung together like a rosary and designed as a mnemonic for the remembrance of God, its mystagogic path contains movement - a direction for the human being and a direction for God's creative energies.[111]

Some of the design features shared by both the Transitional churches and Hagia Sophia in Thessaloniki are then paired with analogous features common to the above *ekphraseis* in a first look at shared spatial topography and an experience of the 'chorography' of construction.[112] This now opens up the discussions and translations of the next three chapters where the poetics and the theology of the *ekphraseis* must occur in an evidential context that is historically and technically exact in terms of scholarship.

The chapter concludes by considering the formal geometry and figures described by the theology of Dionysios the Areopagite and Maximos the Confessor, and the eschatalogical movement within that geometry. It considers Dionysios' proposition of the 'unlike image' being sufficient for mystagogic guidance to divine unity (*henosis)*, and that the formal figures of theology are embodied in the masons' methods and practices (*praktike)* as they construct the formal geometry of the church; formal figures such as the ladder or chain of ascent and descent; the relation of centre and circular perimeter as *anafora*; the *chora* as sacred space; the movement that spirals around the centre.

Chapter 3: The Eucharist Liturgy and Masonry Analogies in Hagia Sophia, Thessaloniki

This chapter looks at how the Eucharist liturgy interacts with the church of Hagia Sophia, Thessaloniki. It introduces the eucharist as taught by Jesus at the last supper: Experiencing through the senses; the centrality of the person; and the principle of love. This teaching, which became the liturgical offering (*anafora*) of the bread and wine was known in the Gospels as 'the breaking of bread' and 'the unveiling of the scriptures'.[113] To Dionysios, liturgy is 'the conversion of what is taken from the realm of the senses to the service of the divine'.[114]

111. To guide the listener from their 'mortal eyes' to arrive at 'immortal eyes' required to behold the spectrum of the 'uncreated light' inherent within the 'created light'. The stages of cosmic imagery are also found within icons and explored in Chapter 4 of this thesis.

112. See Isar (2004) for the neologism "chorography". Isar's work is related to that of Lidov's Hierotopia in the making of sacred space, however she centres her discussion and her neologism on a somewhat different concept of space in *chora*.

113. As told in Luke 24:25-35

114. See Dionysios MT III: 1033 A. This is Louth's translation of Dionysios, In: Louth (2007, p. 162) Dionysios' Ecclesiastical Hierarchy describes the ritual actions of intitation, baptism, and

Thus the sequential stages of the liturgy of St. John Chrysostom are explored alongside the parts of the existing church at stages in which the synaxis participates today. Liturgical stages such as the entrance, perimeter, repentance, coming to earth, offering, communion, the holy spirit, and giving thanks, are linked with the human experience of elements of the building, such as the narthex, walls, *naos*, doors, *mysterium*, *iconostasis* veil, and dome. The circumscription of its *chora* is discussed with the entrances; the relationship of wall, sunlight and windows; the veil of the iconostasis within the space, and the reverberation of the apse and domed space, like masonry bells. After these liturgical stages are explored in their architectural context, selected stages which work in translation are compared with those experienced by masons who build masonry architecture, explained in the responses of the Greek Master masons of Epirus during interviews. In liturgy, the movement of the initiates through the church establishes a symbolic pattern, which at some point sets in motion an analogous movement within a person. The outer actions become the key to inner activation, like true symbols.[115]

The primary liturgical commentators on whose texts this chapter relies are St. Dionysios the (pseudo) Areopagite for his Ecclesiastical heirarchy which interprets the baptism and the liturgy in terms of his time c 500;[116] Maximos the Confessor whose Mystagogia specifically interprets the liturgy and the *ekklisia* as people and church together;[117] Nicholas Casabilas of Thessaloniki who was renowned for his mystical commentary of the liturgy in the mid-14th century; and Archbishop Symeon of Thessaloniki who gives detailed explanations of how the liturgy took place within Hagia Sophia and its symbolism.[118]

A brief history looks at how the celebration of the liturgy changed from the 4th century synaxis in the 5-aisle basilica of St. Mark, to the 8th century when

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eucharist liturgy, and the role of the sacraments of the church.

115. *'Whereas the heavenly liturgy is celebrated in "unveiled" immediacy, its earthly performance is mediated through "symbols" which Symeon characterises as "veils".'* (Constans, 2014, 211)

116. See Dionysius the (pseudo) Areopagite (1897) ***Dionysius the Areopagite, Works***. Translated by Rev. J. Parker. London: James Parker and Co. Rev. James Parker's translation, though made over a hundred years ago, is still in many ways the best translation of his entire works because the English language of the late 19th century was capable of expressing a richer range of nuance than today. This range of meanings is very necessary for a translator of a work that is already richly nuanced in another language, such as the greek of Dionysios.

117. See Maximos the Confessor (1985) ***Maximus Confessor: selected writings***. Trans. G. C. Berthold. New Jersey: Paulist Press

118. See Symeon, St. (2011) ***St. Symeon of Thessalonika: The Liturgical Commentaries***, trans. Hawkes-Teeples, S. ed. Toronto: Pontifical Institute of Medieval Studies. Symeon recorded the perfomance of the liturgies and hymns in the church and the city in his commentaries in the early 15th century. Within the commentary he teaches much about its symbolic meaning.

the domed Hagia Sophia was built on the same consecrated site, within the old walls and foundations.[119] The work of Baldovin on the stational (or processional) liturgies elucidates how they developed in the late Roman cities of Constantinople, Rome, and Jerusalem with the basilican churches.[120] The early liturgy was suited to the design of the basilica, as has been analysed by Matthews in 'An Early Roman Chancel Arrangement'.[121] How the stational system continued on in Thessaloniki can be understood from Fountoules' volumes containing Symeon's compliation of the city's stational liturgies, their seasonal timing and church locations.[122] Likewise, O. Strunk's analysis of the *ekklesiastis typos* as the 'sung office' illustrates how the Psalms were sung antiphonally, spreading a sanctity throughout the city landscape and daily celebrating the liturgy of the hours. His work on the 'sung office' (*asmatike akolouthia*) that went out from the 'Great Church' of Hagia Sophia in Constantionople confims that Hagia Sophia in Thessaloniki also did the same, through manuscript MS Athens 2061.[123]

Grabar, Mango, and Krautheimer all take the view that liturgy and architec-

119. See Strunk, O. (1977) ***Essays on Music in the Byzantine World***. New York: Norton & Co. Inc. referring to codex Athens 2061 found in Thessaloniki's Gymnasion library

120. See Baldovin, S. (1987) ***The Urban Character of Christian Worship: The Origins, Development, and Meaning of Stational Liturgy***. Rome: Pont. Institutum Studiorum Orientalium. His work tells us of the relationship between city and cathedral where the whole of the ancient city, with its sacred places, was celebrated under the heavens through the movement of the processional liturgies, in timing with the liturgical year. Since the see of Thessaloniki was moved from Rome ot Constantinople in 732 AD by the Emperor Leo I, as a first step in establishing closer ties to the capital, the construction of Hagia Sophia, and the choice of name, may be seen as a later consequance of this move.

121. From Matthews' description of the use of the basilica during the liturgy, one can see how the cross-domed church's features also accommodate the same movements. He gives valuable information on the bishop's entrance, and on use of the central axis to the altar, the solea or sacred way. Parallel arrangements for the men and women's aisles, and the division of matroneum, sanctuarium, senatorium find expression in the tripartite sanctuary. (Matthews, 1995, pp. 73-95)

122. See Symeon, St. (1968) Symeon, Archbishop of Thessaloniki: The Liturgical Commentaries/Ta Leitourgika Syngrammata [***Συμεών αρχιεπισκόπου Θεσσαλονίκης τὰ λειτουργικὰ συγγράμματα***.] Phountoulès, J. ed. Thessaloniki. This major compliation of the prayers and liturgies made over the course of the year and throughout the city with notes as to their place and time of perfomance gives a vivid picture of the sanctification of the whole city through ritual prayers and movements as a *chora* in relation to cosmic movements of the heavens. It also contains the very beautiful prayer in memory of the founding of the church which seems to have been celebrated every year on its anniversary in which God is its builder (Symeon, 1968, p. 49).

123. MS Athens 2061 was found in the library of the Gymnasium of Thessaloniki, and it 'contains music for the psalms and canticle as they are sung at the daily Vespers and Lauds throughout the week.' (Strunk, 1977, p. 116) He adds on page 117, *'We may infer that the manuscript comes from an archiepiscopal church, and from other directions found in the same context we may draw the further inference that it was a church possessing a sizable and accessible dome, for at the beginning of the ceremony the psaltists, bearing lights, are described as going up into the dome, and it is from here that they sing their acclamations. This archiepiscopal church with a sizable and accessible dome can only be the great church of Thessalonica, Hagia Sophia, for we know from Simeon, whose treaties is roughly contemporary with our manuscript, that in his day this was the one place where the "chanted" office was extensively used.'*

ture shaped each other.[124] The changes to liturgy which were occuring during the transitional period, especially during the 8th century iconoclasm, are frozen in time with the design of this cathedral church; the processional liturgy becoming more internalised; smaller congregations; the skeuophylakion being moved into the prothesis as part of a tripartite sanctuary; dedicated deacons and monks taking on the responsibilites of the laity in the liturgy of the hours and chanting of psalms; the ceremonial entrances and passages from one state to another -the core of the liturgy- came to be enacted within the church and not between church and city. After the church's construction, the liturgy celebrated in Hagia Sophia changed very little up to the 15th century, and probably to the 16th according to Cormack's monograph.[125] Darrouzes' translation and commentary on Symeon's record vespers in Hagia Sophia beautifully shows a 'transitional liturgical form' that reflects how Hagia Sophia continued to celebrate the 'ekklisiastis typos' liturgy within a Transitional cross-domed design.[126]

Different stages of the liturgy as it is celebrated today, is at times contrasted with the past. The entrances and processions within the church, censing the space, the icons, and the people, moving between the mysterium and the naos through the veil of the iconostasion are considered. Patricios simply and clearly describes the frequently obscure developments in liturgy between the 4th and 8th century, along with symbolism attributed to the parts of the church.[127]

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124. Krautheimer (1986, pp. 40-41) suggests that the *'public, official architecture'* of the basilica was the only available choice for *'practical and ideological reasons'* for the large numbers of Christians after the legalisation of 313 AD since *'it was impossible that this new Christian architecture should evolve from the religious architecture of pagan antiquity'*. For the cross-domed church, *'Whatever its time and place of origin'*, he observes that it is *'splendidly adapted to the practical demands and the symbolism of the liturgy as they became firmly established during the centuries after Justinian'* (ibid. p. 297). Thus the liturgy and the architecture are closely interrelated in his point of view..

125. See Cormack, R. (1981) **'The Apse Mosaics of S. Sophia at Thessaloniki'**. Athens: *Journal of the Christian Archaeological Society*, Journal #10, 4th quarter. [Δελτίον ΧΑΕ 10, Περίοδος Δ'] pp. 111-136. Athens: The Christian Archaeological Society

126. See Darrouzès, J. (1972) ***Littérature et Histoire des Textes Byzantins.*** London: Variorum Reprint, and
Darrouzès, J. (1976) ***'Sainte-Sophie de Thessalonique d'après un rituel.'*** Revue des études byzantines, Vol. 34, pp. 45- 78; This contains Symeon's comparison of vespers at the 'Great Church' in Constantinople and those in Hagia Sophia in Thessaloniki. Darrouzes' commentary analyses the liturgical movement as the officiants entered the church. Symeon's historic description of the entrance at Vespers by himself and the staff of officiating clergy, choirs, and door-keepers describes how persons and incense moved around and through the naos, sanctifying the space and making reverence to the icons, combined with the direction to the altar. This has been analysed by Darrouzes visually. As it was comparable to the Eucharist entrances, one can make a comparison with the 'small entrance' today.

127. See Patricios, N. (2014) ***The Sacred Architecture of Byzantium : art, liturgy and symbolism in early Christian churches***. London : I.B. Tauris. His work is a beautifully written, clear and useful touchstone for what are often obscure issues with unclear evidence and multiple viewpoints by historical writers. Unfortunately, there is an absence of footnotes, and attributions are so minimal that a reader cannot locate his sources except by prior knowledge.

The chapter's references to Symeon, as a primary liturgical commentator, are supported by Symeon's compilers and translators Stephen Hawkes Teeples and I.M. Fountoules.[128] This chapter tries to connect the parts of the church as Symeon saw them liturgically, and the spirit of the actions which he describes. Meyendorff's descriptions of Hesychasm and St. Gregory Palamas, brings the analogy of the movement of air in the body of the church to become a symbol for descent of the Holy Spirit.[129]

The church building is presented as an integral part of the eucharist ritual's horizontal, vertical, and circular movement, with reference to Isar's work on *chorography*, and to Dionysios the pseudo-Arepogite.[130] Constans (2015, p. 206) writes that 'Symeon identifies himself as the "last and least among the students of the students of Dionysios,"' and that his work is aligned with that of Dionysios and Maximos the Confessor.[131] The language used by Maximos, like that of Dionysios before him was that of neo-Platonism. Von Balthazar's work on the 'Cosmic Liturgy' qualifies how the *Mystagogia* of Maximos the Confessor, a central text to this chapter, affirms the principle of the incarnation and the integrity of soul and body, while using the language of neo-Platonism. He describes the method with which liturgy brings the together individuals of the synaxis through communion, so that by the end of the liturgy they have been ritually reborn in Christ as a community and as individuals. They have been guided, at least ritually, to realise the *Logos*, that focal place at the centre of the circle. Zizioulas (1985, p. 98) credits Maximos with,'nothing less than the miracle of reconciling a circle with a straight line. The way he worked out a relationship between ontology and love', and his theology builds upon Dionysios' earlier work of unifying the ladder of ascent and descent with the figure of the circle and the centre.[132] Horizontal movement and vertical movement are both seen as expressing similitude in Dionysios' theology therefore it is through his theology that one can see procession and return of liturgy as metaphors for ascent and

128. See Symeon, St. (2011) ***St. Symeon of Thessalonika: The Liturgical Commentaries,*** trans. Hawkes-Teeples, S. ed. Toronto: Pontifical Institute of Medieval Studies. For Fountoules' commentaries on the current liturgical form see Fountoules, I., Chrysostomos, Auxentios, and Akakios (2009) ***Orthodox Insights*** Vol. 1, Etna: Centre for Traditional Orthodox Studies

129. See Meyendorff, J. (1974) *St. Gregory Palamas and Orthodox Spirituality*. New York: St. Vladimir's Seminary Press.

130. Isar's article, mentioned earlier,

131. See Constans, Fr. M. (2015) ***The Art of Seeing: Paradox and Perception in Orthodox Iconography***, Athens: Sebastian press. Father Constans fills this slim volume with insights into a lived theology. He writes of the icon screen, of Symeon's interpretation of the space of the church, of Dionysios' inflence on Symeon.

132. See (Zizioulas, 1985, p. 98) Zizioulas, J. D. (1985). ***Being as Communion: Studies in Personhood and the Church***. London: Darton, Longman, and Todd

descent, and at the same time as the movement between centre and perimeter, with straight, circular, and spiral motions of the angels around God.

The liturgy generally moves horizontally within the different parts of the church, to which symbolism is assigned in Maximos' *Mystagogia* and Symeon's commentaries. Two iconographers discuss this: Constans (2015, pp. 208-209) paraphrases Maximos with, 'narthex and nave together correspond to the visible earth (understood to include the visible heaven), while the sanctuary is a type for that which exists beyond visibility, that is, the realm of the invisible God. ... [Here] the two perfomance areas of the church (the sanctuary and the nave/narthex) are said to image the two natures of Christ, the human and the divine'. However, if we look at Symeon's own words for 'the shape of the divine temple' we see vertical cosmological metaphors applied to horizontal divisions of the church.[133] Ouspensky (1983, p. 60 and 1964, p. 193) discusses the iconsostasis as 'the boundary between two worlds' and gives attention to the *cosmitis* (entablature) of the sanctuary screen, which is the key that connects the horizonal movement of liturgical actions with the vertical figures of iconography and architecture in the next chapters.[134] Information on vertical liturgical movement is limited, but should have direct parallels with the masons' constructive anagogy: Symeon implies a cosmological and Dionysian symbolism in the ascent and descent of the Bishop from his synthronon; Mainstone, too, describes the movements of the Emperor and others to and from the upper galleries of Hagia Sophia, Constantinople during the liturgy.[135] An ascent to the dome had been integrated into the liturgy for the 'elevation of the cross' in Hagia Sophia, Thessaloniki.[136] This liturgy, as performed in Symeon's time, has been elaborated by Gerstel et Al.[137]

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133. Symeon (2011, v. 16, p. 91) *'But the shape of the divine temple also represents what is on earth, what is in heaven, and what is above the heavens; the narthex being the earth, the nave heaven, and the most holy sandturary that which is above the heavens.'*

134. According to Ouspensky (1983) the iconostasis is described by in symbolic terms by both St. Sophrinos of Jerusalem as the 'figure of (typos) of the catapetasma' (the sanctuary veil) and by Symeon for whom "the cosmitis represents the bond of love and unity in Christ which the saints of earth have with those in heaven" (ibid. 1964, p. 195).

135. See Mainstone, R. (1988) ***Hagia Sophia: Architecture, Structure and Liturgy of Justinian's Great Church***, New York: Thames and Hudson Mainstone gives a detailed reconstruction of the liturgy enacted in Hagia Sophia in Constantinople in the 6th century.

136. Strunk reports that cod. Athens 2061 describes the psaltists in S. Sophia at Thessaloniki going up into the dome and from here singing their acclamations (also in: Εύχαι και Ύμνοι, Thessaloniki, 1968). This chapter's analysis of the dome as a choral space used liturgically in the Feast of the Elevation of the Cross is based on this manuscript. As a measure of its importance in connection the movement of liturgy and construction, Velenis (2003, pp. 70-101) devotes thirty pages of his short book to his argument about the ascending staircases in the dome buttressing and the access up into and onto the dome for the cantors and deacons.

137. See Gerstel, S., Kyriakakis, C., Raptis, K., Antonopoulos S., and Donahue, J. (2018)

Finally, selected liturgical themes are compared with the masons' experience during construction. Here, the 'translation' by analogy seems best made through the masons' internal movement of feelings and perceptions while constructing, because liturgy today moves horizontally whereas the masons' mindful path overall moves vertically. The liturgical experiences of entering the church, sequestering the senses (making the perimeter), focus on the sacraments and the person of the Bishop representing Christ, the God incarnate who came to earth, love for God incarnate, repentance, sacrifice, communion, the Holy Spirit and thankfulness, are compared with the masons' building the walls (sequestering the senses), heavy toil (repentance), focus, surrender (down to earth, the earthen material), love, communion, work without hands (acheiropoeiton), weightlessness, doing while not doing (anenergesia), and thankfulness.[138]

Having explored the method of the liturgy within the space of the church in relation to its architecture, which is experienced at the same time, the next chapter on iconography charts these movements coming together more explicity.[139]

Chapter 4: Translating between the Iconography and the Architecture of Hagia Sophia

This chapter looks at the iconography in the space of the church and how it maps out a sacred topology by 'likeness' (*aemulatio)* and, through the chain of causality (*convenientia)* describes a cosmological hierarchy of creation from God and returning to God, positioning the divine person at the centre of the radiations of analogy, and inviting one to enter that *chora* with love. This chapter compares the hierarchy and geometry of the Byzantine icon with the architecture of Hagia Sophia and relates some of its figures to the geometric figures and analogies embodied in the masonry architecture. It also considers some of the the similarities between the work of the icon painter and that of the mason.

Byzantine iconography is introduced as both theory and method (*theoria* and *mystagogia*). The Master iconographer Ouspensky explains its aspect of

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'Soundscapes of Byzantium: The Acheiropoietos Basilica and the Cathedral of Hagia Sophia in Thessaloniki.' *Hesperia: The Journal of the American School of Classical Studies at Athens*, 87(1) (Jan.-March), pp. 177-213. Athens : The American School of Classical Studies. This interesting article devotes a sizeable study to the Elevation of the Cross and also describes the stational liturgies connecting Hagia Sophia with the Acheiropoeiton basilica.

138. See the Appendix of this thesis for selected interviews. All those interviewed admitted that a profound love of their material, and an obedience to the stone, the earth, and the mountain, is necessary for them to do their work well, and for being able to rise to the level of Master mason

139. Icons have a natural vertical hierarchy except when applied to the top of a dome, or on the altar cloth and epitaphion. Within iconography the innate verticality is coupled with a dual direction from one side to the other. The figure of a centre and perimeter, expressing radial directions, is frequently depicted.

inscription.[140] He explains that,

> ... the image is necessarily inherent in the very essence of Christianity, from its inception, since Christianity is the revelation by God-Man not only of the word of God, but also of the Image of God. ... The truth revealed in Christianity lies at the foundation of its pictorial art. So the image not only does not contradict the essence of Christianity but, being its basic truth, is inalieably connected with it. (Ouspensky, 1983, pp. 25-26)

Through symbolism (analogy and allegory) the icon's specific pictorial language describes a divine reality that can be indicated but to be known must be personally experienced.[141] He explains the icon's role as an interface and a guidance.[142] The ability of the icon to bring a divine reality into a person's presence through the likeness of Holy persons is discussed by Belting.[143] He describes techniques whereby, 'The gaze of one entering a Byzantine church will be directed upward to the central dome and forward to the cult niche behind the chancel, the two poles of the decoration' (ibid. 1994, p. 173).[144] The icons guidance to connect eye and heart, and the requirement that it be not an innovation of artists, is introduced here with reference to Barber.[145] He relates the necessity

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140. Just as the Gospel is heard with 'carnal ears' so the visual aspect of Christ life may be seen with 'carnal eyes' (Ouspensky, 1992, p. 48) Ouspensky's experienced and practical view of iconography knows how the iconographer indicates the unseen world through the seen as a language of techniques and symbols. Three texts are referenced in this thesis: Theology of the Icon, The Meaning of Icons, and The Problem of the Iconostasis.

141. Leonid Ouspensky took a long personal voyage away from his religion and his community to reach an understanding of how iconography and theology are part of a person's life and path. Later, as a renowned icon painter, he wrote two seminal books which explain and dignify Orthodox iconography theologically, in the language of the 20th century. From him and his younger theologian friend Vladimir Lossky the next generation of 20th and 21st century theologian-iconographers has grown. See Ouspensky, L. and Lossy, V. (1983) ***The Meaning of Icons***, Trans. G.E.H. Palmer, New York: St. Vladimir's Seminary Press.

142. See Ouspensky, L. (1992) ***The Theology of the Icon,*** Vol 1, New York: St. Vladimir Seminary Press. John of Damascus is quoted on how not only the word but also the image can give guidance to the spiritual world.

143. See Belting, H. (1994) ***Likeness and Presence: A History of the Image Before the Era of Art.*** Trans. E. Jephcott, Chicago: University of Chicago Press. Belting writes with clarity on the image that has been detached from its source, that it requires truthfulness or authenticity, that it can be justified in the case of saintly, enlightened persons whose image is identical with their person, and that, *'The suggestive power of the autonomous image also derives from the encounter of its physical existence, which is dramatized whenever the image is set in motion, when it moves from place to place like a living person, or when, on ceremonial occasions, it appears like an honoured individual from behind a normally concealing curtain.'* (Belting, 1994, pp. 47-48).

144. Belting also describes the process of entering into sacred space (the church) and making reverence to the presence of the Holy persons in the unseen realm, through *proskynesis* to the icons. He devotes a page to Symeon of Thessaloniki's description of the archbishop's entrance with entourage, into the *naos* and the ritual reverence given to the Holy Mother, Christ, Mary of Egypt, and the icon of the day. There is also a description of the incensing of icons *'for incensing means participation in divine grace'* (Belting, 1994, pp. 530-531).

145. See Barber, C. (2002) ***Figure and likeness: on the limits of representation in Byzan-***

for a 'truthful connection' of image and prototype.[146]

The distribution of icons within an orthodox church that Demus' classic work calls 'the theologians' concern as much as the artist's' is reviewed with reference to the different zones of the church, defined in Hagia Sophia by the architectural features.[147] Ouspensky's article discusses the metaphysical arrangement of images on the iconostasis and its role as an architectural feature, dividing and uniting earthly and heavenly realms, illustrated with reference to Symeon of Thessaloniki.[148] Discussion of its iconic topology, references Eliade's neologism of *hierophany* and Lidov's *hierotopia*, in its *choric* dimensions.[149] The space of the 'Byzantine *chora'* is discussed with reference to Isar, as the place of God's 'energies'.[150]

The theological debates of iconoclasm, which mark the Transitional period in which the church was built, introduce concepts as relevant to the production of a work of religious art, as much as to a work of religious architecture. Pelikan's monograph on eighth-century iconography examines three ways in which the image was justified: by the artist as 'efficient cause', and thus the concept of the image 'not made by hands' (*acheiropoeiton*); by the 'material cause'

tine iconoclasm. Princeton NJ: Pinceton University Press. Barber discusses the debate for icons during iconoclasm and charts the various arguments, the most pertinent to this thesis being against the 'deception enacted by an individualised artisan working for personal gain' (p. 112). He charts the very unique moment in history where the artist's path is formalised as

146. In Figure and Likeness, Charles Barber (2002) traces the history of iconoclastic debate, writing that, *'In the course of the eight and ninth centuries, the ideas in play around the icon and the emphases within these ideas were to change considerably'* (p. 10), and that above all it was the image of Christ which was central to the debate.

147. See Demus, O. (1976) ***Byzantine Mosaic Decoration: Aspects of Monumental Art in Byzantium*** London and Henley: Routledge, Kegan and Paul. In Demus' work, influential to this day, the two-dimensional interior mosaics or painted iconography and the architectural features of a church compose one synthetic image with hierarchic topographic conventions.

148. See Ouspensky, L. (1964) **'The Problem of the Iconostasis',** *St. Vladimir's Seminary Quarterly* Vol 8:4, New York: St. Vladimir's Orthodox Theological Seminary

149. Alexei Lidov has articulated the space defined by icons and sacramental relics by coining the neo-logism 'hierotopy'. See Lidov, A. (2015) **'Creating the Sacred Space: Hierotopy as a new field of cultural history'**, *Spazi e Percorsi Sancti: I sanctuari, le vie, i corpi*. [Online] Limena: Libreria Universitaria Edizioni. *'The term "hierotopy" (hierotopia) consists of two Greek roots [hieros (sacred) and topos (place, space, notion)], as well as many other words already established in our vocabulary in the last hundred years, among which the term "iconography". The notion might be expressed as follows: hierotopy is the creation of sacred spaces regarded as a special form of creativity, and a field of historical research which reveals and analyses the particular examples of that creativity.'* (Lidov, 2015, p. 62) See Eliade, M. (1959) ***The Sacred and the Profane: The Nature of Religion.*** Translated by W. R. Trask. New York: Harcourt, Brace and World

150. See Isar, N. (2004) **'Chorography (Chôra, Chôros, Chorós) - A performative paradigm of creation of sacred space in Byzantium.'** In: *Hierotopy: Studies in the Making of Sacred Space*. pp. 59-90) Moscow: Radunitsa, and
Lidov, A. (2017) **'Icon as Chora: Spatial Aspects of Iconicity in Byzantium and Russia'**, *Byzantios: Studies in Byzantine History and Civillization* 10, Turnhout: Brepols

with the related question of the Incarnation; and the 'formal cause' in which he argues that theology of the Transfiguration led to a 'rehabilitation of the visual', and sanctification the senses.[151] This concern with the relationship between the image (icon) and its origin as protoype and archetype brings us a sense of a unique moment in history where divine power was weighing in on the side of the image.[152] This had never happened before and has never happened since. Authors such as Pelikan, Grabar, and Pentcheva present issues of power associated with icons.[153] C. Barber (2002) in his monograph on the iconography of the Transitional Period compares them to 'theological weaponry'. Pentcheva's monograph on the iconography of the *Theotokos*, writes of the immense power that her icon conferred to the people, and how this power was harnassed by the clergy to craft a civil society.[154] Until then, the abuse of imagery by personal power, which had corrupted the religious imagery of the Roman State, was locked in combat with the Divine power presented by theology through the incarnation of Christ. Thus it could be argued that until Christian rule had created the conditions for an art devoted only to spiritual truth, it would not have been possible to argue for iconography. But in the 7th and 8th century, around the time of iconoclasm, the theological conditions became right to argue for religious imagery. This is what makes the iconography of the Byzantine Church so

151. See Pelikan, J. (1990) ***Imago Dei: the Byzantine apologia for icons***, Washington: Princeton University Press. Pelikan calls Eusebius of Caesarea, who recorded the response of Jesus to King Abgar of Edessa in the story of his mandilyon, the 'the father of iconoclasm' (ibid. p. 72) for his 'disjunctive syllogism' regarding the impossibility of portraying the divine image, and the heresy of not portraying it. However, John of Damascus argued for the 'new order' brought by Christ's incarnation, 'now that the invisible God had become human through the Incarnation of the Logos, he had in Christ also become "circumscribable" in an icon.' (ibid. p. 82).

152. Christians themselves were in a state of uncertainly about the image throughout the early centuries, due to its immense power and the risk that it would lead to destruction of the truth by idolatry. If any group debates the old adage, 'art is the lie that tells the truth' they polarise into those who fear that it could become a lie, and the others who focus only on its capacity to tell the truth. However in the divine order or things, faith always trumps fear, thus the conditions were right for the development on a language of imagery rivetted to truth and the desire to discriminate and reject the 'false image'.

153. Grabar (1984, pp. 135-163) gives us a picture of the power struggles fought through imagery put the service of the human will; through the imagery on coinage as political tools of the iconoclast emperors, and through the removal of the icon of Christ from the bronze doors of the imperial palace and public places. In later chapters (pp. 167-203) he focusses on the period between the two iconoclastic eras, around the time of Hagia Sophia, Thessaloniki's construction, and the travails of the Archbishop Theophilos. He discusses the aniconic mosaics within the church, and important comparisons with other Transitional churches.

154. See Pentcheva, B. (2006) ***Icons and power: the Mother of God in Byzantium***, University Park, Pennsylvania: Pennsylvania State University Press. Of especial interest to this thesis are her descriptions of the role of the Theotokos in defensive warfare, her identification with the city walls, her metaphorical identification with the defense of human purity in spiritual warfare, and her association with military saints to either side of her. In her association with both walls and gate, icons of her with military saints or angels to either side echo the ancient figure of the city gate with guardians to either side. Pentcheva shows how these were incorporated into Byzantine history and culture.

important and what gives it its enduring power and timeless radiance. At that time, the icon acquired the powerful language of the Greco-Roman image but the insistent attachment to truth born of Christ's teachings and the firm foundation of monotheism. Practices whereby the icon-painter himself must become the guardian of that truth are addressed with reference to the work of Ouspensky, Temple, Pearson.[155]

Thus a visual language attached only to truth was born of this debate. For this reason it becomes possible to translate its visual language and its message into another medium such as architecture, and to use analogous qualities as the basis of the translation. The icon's language is based on light, a spectrum of pure colour, emanated from the heart of divinity and presented by Christ. The language of architecture is based on earth, on the slowing down of light such that it reaches the spectrum of matter. It is the earth of the human body, of the incarnation. As we are told, human is created from earth.

A description of the aniconic 8th century mosaics and marble follows, refering to Cormack's (1981) exacting historical research.[156] Velenis' (1997) close scrutiny of the mosaic inscriptions is also a reference.[157] According to Grabar, the inscriptions and aniconic mosaics of several Transitional churches connect them, and Ousterhout concurs.[158] Text, abstract decoration, and architecture must be read together to understand the symbolism. For example the gold mosaic, known as its 'light' in which divine grace is understood, has been ana-

155. See Pearson, P. (2005) ***A Brush with God: an icon workbook***, Harrisburg: Morehouse (for Ouspensky and Temple see footnotes #104, 142, 148). Pearson gives us a glimpse into the *'Spiritual Practice of Iconography'* through his own experience, with insights into methods for the person of the painter such as prayer, gazing, breathing, fasting combined with methods for making the icon such as how to copy models, how to 'see' and remember God's eyes, how to work with the colours, layers, gold leaf and so on. In that he connects the development of the person with the art, he provides a parallel with the art of the mason.

156. See Cormack, R. (1981) **'The Apse Mosaics of S. Sophia at Thessaloniki'**. Athens: Journal of the Christian Archaeological Society, Journal #10, 4th quarter. [Δελτίον ΧΑΕ 10, Περίοδος Δ'] pp. 111-136. Athens: The Christian Archaeological Society. Cormack's article addresses the dating of the church, its political context, and the relationship between the aniconic and the figurative mosaics.

157. See Velenis, G. (1997) '**Chronology of the church of Hagia Sophia in Thessaloniki through the epigraphic data' [Η χρονολόγηση του ναού της Αγίας Σοφίας Θεσσαλονίκης μεσα από τα επιγραφικά δεδομένα]** In: *City of the Thessalonikans, texts and sources of 6,000 years*, Thessaloniki: City of Thessloniki [Council]

158. See Grabar, A. (1984) ***L'Iconoclasme Byzantin: Le Dossier Archéologique*** (2nd Ed.) Paris: Flammarion; and Ousterhout's chapter in Brubaker, L. & Haldon, J. (2001) ***Byzantium in the Iconoclast Era (ca 650-850): The Sources. An annotated survey (with a section by R. Ousterhout, The Architecture of Iconoclasm: The Buildings)***. Aldershot: Ashgate. The matching inscription is found in Hagia Eirene and Hagia Sophia in Thessaloniki; a linking iconoclastic cross with a later Theotokos mosaic link the churches of the Koimesis in Nicaea and Hagia Sophia in Thessaloniki, and the inscription is significant. Grabar (1984, pp. 176-177), and Brubacker and Haldon (2001, pp. 19-24).

lysed by Lidov.[159] The marble revetments as archaeological findings have been published by Theoharidou (1994) but their value as iconic images can be found in the *ekphraseis*.[160] The Sougitha refers to the polished marble as the 'image not made by human hands', alluding to the marble itself portraying an image of Christ incarnate.[161] 'Thus a church is an image, an icon, of the Church, the body of Christ', writes Ouspensky (1992, p. 18). Barry, too addresses the imagery embodied in the marble material.[162] In addition to Curcic's work, Barry offers another springboard for translating between the language of theology and iconography, and that of architecture. His work validates making the translation between the iconographic landscape and the Byzantine *ekphraseis* in which the marble yields the image of cosmic waters and a cosmic landscape. From Procopios to Paul the Silentiary to Constantine of Rhodes, the light within the marble brings the image of the landscapes of the *oikoumene*, and that in turn brings the image of Christ the divine presence who took on earthly human form in human community.

Hagia Sophia Thessaloniki's figurative mosaics of the Theotokos and Analipsis from the 9th century and later, are described in their historical context.[163] The chapter then focuses on the aspects which translate well with the masonry architecture, such as geometric composition and the placement of iconography in the building. Temple's work suggests how the geometry of theology and philosophy, astronomy and cosmology, is mapped onto analogous natural landscapes, urban settings, and holy persons through traditional techniques and

159. See Lidov, A. (2017) **'Icon as Chora: Spatial Aspects of Iconicity in Byzantium and Russia',** *Byzantios: Studies in Byzantine History and Civillization* 10, Turnhout: Brepols

160. Paul the Silentiary's descriptions of the marbles of the oikoumene, sent to Hagia Sophia in Constantinople, evoke from them cosmic landscapes, stars, flowers, meadows, rivers, and the human being. In: Mango, C. ed. (1972) ***The art of the Byzantine Empire, 312-1453. Sources and documents.*** Englewood Cliffs: Prentice Hall

161. See McVey (1983, pp. 91-121).

162. See Barry, F, (2007) **'Walking on Water: Cosmic Floors in Antiquity and the Middle Ages'**, *The Art Bulletin* LXXXIX:4, pp. 627-656. Barry's article focuses mainly on the image of flowing water in the marble floors of the churches, of which Hagia Sophia in Constantinople is an example celebrated by *ekphraseis* which make clear this metaphor is intended. Interestingly he find instances of earlier Jewish synagogues in which this imagery was invested in the marble on the walls. *'The simulacrum of the church therefore fixed the image of creation in a material metaphor that literally enacted Job's words that "the water are hid as with a stone, and the face of the deep is frozen" (Job 38:30)'* (ibid. p. 637). Later on the same page he writes that, *'Rabbinical commentaries on the Herodian Temple make is clear that the visual association between marble and water was very well esablished in Judaic lore long before its explicit Byzantine appropriation.'* and that a Babylonian Talmud has the Rabbis associating the marble walls of the temple with the waves of the sea.

163. Pentcheva's book ***Icons and power: the Mother of God in Byzantium*** (see earlier footnote) allows us to see the Theotokos mosaic in her aspect of 'Nicopoeia'. Though she is not depicted here with flanking military archangels Michael and Gabriel as was frequent in the apse of Byzantine churches, the creation of this mosaic in the 9th century time has strong associations with the Triumph of Orthodoxy as a spiritual, political and also social battle.

compositions.[164] The resulting icon is not is not a naturalistic portrayal of persons and stories since they are composed within a visual language that speaks of a divine reality, as Ouspensky explains from the maker's point of view.[165] De Santillana and Duchend provide scholarly background for the understanding of astronomy in iconography.[166] The cosmology of Cosmas Indicopleustes validates how this translates into architecture.[167] The chapter researches how these themes could be seen as reiterated or recapitulated in Hagia Sophia, Thessaloniki.

The last part of the chapter compares the vertical hierarchy depicted in Byzantine icons with the anagogy of those who build masonry arches, vaults, and domes.[168] The intellectual message of the icons is shown to describe the connection between God and creation through visual hierarchies that rise upwards apophatically, and descend downwards in the act of creation through symbolic imagery. Icons can be read from top to bottom or bottom to top as a complete picture, much as Dionysios' dialectic of symbolic and apophatic theology make up the action of the mind, through the working of analogy. It is their simulta-

164. Temple's lifelong work with icons and iconographers comes together in ***Icons and the Mystical Origins of Christianity*** (see Ft. #104, p. 50) in which he traces the archaeology of their formal composition, relating it to the transformations in philosophy and theology that were happening in the period between Hellenistic philosophy and Middle Byzantine Christianity.

165. In ***The Meaning of Icons***, and at the very end of the ***Theology of the Icon***, Ouspensky describes the principles of symbolism and composition in iconography, though focussing mainly on the human figures, rather than the architecture or landscape background. He explains some of the artistry used in icons to communicate what cannot be shown visually. *'The liturgy tells us that in the icon of the Holy Face we prostrate ourselves before the face of the Saviour which 'shines more brightly than the sun'* (ibid. p. 174), therefore he explains the device of the halo. *'The Holy Spirit Uniting with Intellect'* is the reality of the holy person, but to depict this graphically tradition uses a halo *'which is a precise sign, in an image, of a well-defined event in the spiritual world.'* (ibid. 1992, p.175).

166. See De Santillana, G. and Von Dechend, H. (1969) ***Hamlet's Mill: An essay on myth and the frame of time***. Boston: Gambit. The groundbreaking work of these two authors illustrates how astronomy was built into the icon's geometry, thereby building its spatial arrangement as theological metaphor and guidance to prayer (reflection on the place of the person in the universe). It enables this thesis to understand the synchronous geometry of architecture and icon, how the tradition of pre-iconoclastic iconography informed the design of the Transitional church, and how it connects the personal experience of the mason as the space in which he stands and works, with a hands-on meditation guided by the theology of his time.

167. See Indicopleustes, C. (1897) ***The Christian topography of Cosmas, an Egyptian monk.*** Translated by J.W. McCrindle and J. Watson. London : The Hakluyt Society Indicopleustes, C. (1909) ***The Christian Topography of Cosmas Indicopleustes.*** [Greek] Winstedt, E.O. ed. Cambridge: Cambridge University Press. In *Icons and the Mystical Origins of Christianity*, mentioned earlier, Temple connects astronomy with landscape in the icon, basing his chapter on the subject on Indicopleustes. Cosmas' illustrates his travels by visualising the co-ordinates of astronomy as geography but also as the masonry architecture of a cubic room surmounted by a vault. This is an important work for this thesis, illustrating the translation between astronomy, iconography, and masonry architecture.

168. Hierarchies which are layered in a cosmological landscape, both natural and partly architectural, with a path that masons experience during construction of arches, vaults, and domes, suggesting that there may have been a conscious connection.

neity in the icon that is anagogic and moves the meditator to "knowing above mind" (ὑπέρ νοῦν γινώσκων, MT III A) as Dionysios describes in his Mystagogia. The heirarchy in icons is described from top to bottom in conjunction with the topology of the church of Hagia Sophia, and from bottom to top when viewed as the masons' mystagogy in parallel with the mystagogic and anagogic stages of the liturgy.

Chapter 5.0 Masonry Analogies and Methods in the Construction of Hagia Sophia, Thessaloniki

The chapter starts with the maker's point of view. Ouspensky wrote that the technique of the iconographer depicts a spiritually percieved reality. Here it is proposed that the technique of the masons also makes an 'unlike image' of a spiritually percieved reality in the building of the church. The icon's image can only be a directly analogous to its visual aspects, though it can communicate a message about other aspects with a more discursively analogous symbolic language.[169] This chapter sets its epistemological parameters, based on architecture's specific quality of communicating with all the senses by direct analogy, yet it can also be read symbolically with a message of a spiritually percieved world. Bachelard's concept of the 'material imagination' affirms the continuum of sense perception and the mind (*nous*). Here, this is explored through 'making' as the original poetics.[170] The *acheiropoeiton* and 'images of matter' relate Bachelard's 'oneirism of work' to Dionysios' *anenergesia* (doing while not doing) in the haptic-meditative work of the mason.[171] Architect Khalili's work in earth architecture as 'a tangible spirituality' oppose Baldwin Smith's view of the masonry dome as a translation from woody material into stone.[172]

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169. Architecture's innate qualities as a mute (pre-verbal) medium, immerses the inhabitant in its message; it communicates through all the senses holistically, analogously.

170. Curtius defines poetics as 'making' and 'producing', in Curtius, E. R. (2013) ***European Literature and the Latin Middle Ages.*** Translated by W. R. Trask.

171. See Gaudin, C. ed. (1987) ***On Poetic Imagination and Reverie: Gaston Bachelard***. Dallas TX: Spring Publications Inc. and
Bachelard, G. (1971) ***The Poetics of Reverie: Childhood, Language, and the Cosmos*** Translated by D. Russell. Boston: Beacon Press and
Bachelard, G. (1983) ***Water and Dreams: An Essay on the Imagination and Matter***. Translated by E. R. Farrell. Dallas: The Pegasus Foundation Dallas Institute Publications and
Bachelard, G. (1994) ***The Poetics of Space***. Translated by M. Jolas. Boston: Beacon Press.
Bachelard's philosophy of science explores the relationship between poetics and the human psyche within a scentific discipline. The four elements are taken in their archangelic aspects as communicators, much like the divine names; as themes they run through his books connecting the seen and the unseen and bringing the divine into the earthly and sensory realm of science.

172. See Baldwin Smith, E. (1971) ***The Dome: A Study in the History of Ideas.*** Princeton, New Jersey: Princeton University Press and
See Khalili, N. (1995) ***Sidewalks on the Moon: The journey of a mystic architect through tradition, technology and transformation***. Hesperia, CA: Cal-Earth Press.

Taking its cue from the forensic reconstruction of the physical churches of the Transitional period by art historians Jerphanion, Karydis, Velenis, Cormack and others, this chapter attepts to reconstruct forensically the experience of *those who construct* this 8th century church building.[173] The near timelessness of the mason's experience, based on methods which hail from the 3rd millenium BCE, or earlier, is still touched by practicing masons who use their derivatives today. However, this thesis refers to a historical building in a political and social context. The person of the mason has been addressed in Chapter 2 of this thesis, but it is enriched in this chapter by Ousterhout's monograph of Byzantine masons' methods and materials.[174]

Reconstructing the 8th century masons' methods relies on the scholarship of art historians of this period, as well as referencing traditional methods still in use by modern masons, and direct fieldwork examining the church. Just as imitating the work of masters provides the training for the appentice icon painter, so building the church itself provides the training for the mason.[175] The construction scheduling in Mainstone's (1988, Ch. 8, pp. 185-269) analysis of building Hagia Sophia in Constantinople informs the way this chapter takes a journey with the mason.[176] Stage by stage, construction had to be timed in sequence because in masonry architecture each part depends on the presence of adjacent parts.[177] Every part of a domed masonry design serves a structural purpose that is additive, according to Sanpaolesi.[178] Mainstone and Sanpaolesi's descriptions

173. For scholarship specifically pertaining to Hagia Sophia in Thessaloniki, see Velenis, G. (2003) ***Middle Byzantine Churches of Thessaloniki***. Athens: Academy of Athens, Research Centre for Byzantine and Post-Byzantine Art.

174. See Ousterhout, R. (1999) ***Master Builders of Byzantium***. New Jersey: Princeton University Press.

175. The icon painter's person evolved through doing the painting itself, grinding the pigments, preparing his materials, and copying the formal techniques and subjects of the painting was the icon painter's mystagogic path. Similarly for the apprentice mason to reach to become a Master mason and to attain *anenergesia* and *henosis*, the apprentice mason follows those with experience and learns while building the church.

176. See Mainstone, R. (1988) ***Hagia Sophia: Architecture, Structure and Liturgy of Justinian's Great Church,*** New York: Thames and Hudson. Mainstone's book addresses both the structure of the cathedral and the liturgy enacted within it. His approach to the interaction between liturgy and architecture is fundamentally functional while his scholarship is impeccably thorough and therefore he provides good insights into the process of construction, its sequencing and 'project management', and likewise his description of the enactment of the liturgy within the physical church is clear in its description.

177. The design of the Byzantine masonry church makes it appear is if it is hanging from above, whereas in fact it is completely supported from below. A chain of *convenientia* hanging down, as it were, and demanding to be climbed by the masons. cf. Temple (2001, Ch. 6)

178. See Sanpaolesi, P. (1978) ***La Chiesa di Santa Sofia a Constantinopoli,*** Rome: Officina Edizioni, whose monograph on Hagia Sophia, Constantinople demonstrates his depth of knowledge as an engineer.who has restored historic masonry churches. He clarifies issues such as the purpose of bounding arches and how the sequence of the construction provides the necessary buttressing at every level.

of masonry's additive method provides clues for a masons' anagogy as a learning ritual combined with the production of a building.

The continuity and change between the Late Roman and Byzantine methods and materials, vital to a realistic reconstruction, is informed by primarily by the research of Adam, Lancaster, Choisy, Vitti, Karydis, and Moropoulou. Adam presents the evidence of Roman construction methods and materials production through the primary sources of tombstones, epigraphy, sculptures, and bas relief.[179] Vitti brings the development of these techniques closer to Thessaloniki, with his scholarship of early vaulting in the Peloponnese and Asia Minor.[180] Karydis focuses specifically on the masonry technique of the Transitional period, for example its 'timber-saving formwork' and preferred ways of constructing pendentives and bounding arches.[181] His reconstructions of pendentive domes and domes on pendentives, from the fragmentary exposed brickwork of St. John the Theologian and St. Mary of Ephesos elucidates much about the probable way Hagia Sophia's pendentives were constructed.[182] Of the legacy of earlier scholars who specifically focussed on Byzantine construction, Choisy's work continues to be a source for contemporary scholarship.[183] In the same way,

179. Adam, J. P. (1999) ***Roman Building: Materials and Techniques,*** Trans. A. Mathews, London: Routledge, gives a well-researched basis from which to compare any Byzantine developments. In the construction of bearing walls and piers, those aspects of the builders' tools, materials and practices with Roman precedent are referenced to J. P. Adam who illustrates vividly with tombstones and monumental bas reliefs, and descriptions of the production of materials such as lime and bricks. The practice of land surveying is cross referenced to Rykwert, and the heritage of numerology in the application of proportional systems to Joost-Gaugier, who both provide Roman cultural and religious antecedents. See Rykwert, J. (1976) ***The Idea of a Town: the anthropology of urban form in Rome Italy and the ancient world.*** London: Faber and Faber Ltd. and
Joost-Gaugier, C. (2006) ***Measuring Heaven: Pythagoras and His Influence on Thought and Art in Antiquity and the Middle Ages***. Cornell University Press: Ithaca and London
Also, the production of materials such as brick and lime is cross-refenced to Antonaras, A. (2019) **'Arts, Crafts and Trades in Ancient and Byzantine Thessaloniki Archaeological, Literary and Epigraphic Evidence'**, Eds. Bosselmann-Ruickbie, A. and Ruickbie, L., *Byzanz zwischen Orient und Okzident* 2, Mainz: Leibniz-WissenschaftsCampus

180. See Vitti, P. (2016) ***Building in Roman Greece: Innovation in Vaulted Construction in the Peloponnese,*** Rome: L'Erma di Bretschneider. In this book Vitti focuses on the greek-speaking Roman Empire as they adopted the architecture of arches, vaults and domes. As an architect who works with masons in the restoration of historic buildings, he is able to provide a state-of-the-art vocabulary for masonry construction within academic terms. His work here also helps to identify the places in Greece and Asia Minor which first adopted vaulting and later grew into significant commerical centres of production.

181. In **'Limiting the Use of Centering in Vaulted Construction: The Early Byzantine Churches of Western Asia Minor'** N. Karydis (2012, p. 2) writes that not enough scholars are studying specifically Byzantine developments of vaulted techniques to 'minimise the use of timber in construction'. To redress the problem this paper describes ways in which Byzantine vaulting could have been constructed with a mixture of uncentered techniques and reduced centering only where necessary.

182. See Karydis (2011) described in footnote #87, p. 46 of this chapter.

183. Choisy's work still holds its own in the 21st century, and has informed this chapter, in

while Theoharidou's survey of the church is the best to date, many of her conclusions have been updated by scholars such as Velenis and Feist.[184] Lancaster describes how masonry vaulting developed out of Roman practices which cast concrete cemented by pozzolana (volcanic earth from Mt. Vesuvius), into early Christian brick vaulting techniques.[185] Moropoulou analyses the unique terracotta aggregate Byzantine mortar, which defines the quality of an entire stucture. She sees Byzantine vaulting as concrete structures reinforced with brick and stone, rather than brick and stone structures whose interstices are filled with fluid mortar.[186] This highlights how Byzantine construction may look like the methods of East but, having absorbed its lessons, drew upon its own tradition of Roman concrete to produce one of the innovations of which Buchwald writes.[187]

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particular referencing pendentive construction. See Choisy, A. (1883) ***L'Art de bâtir chez les Byzantins.*** Paris: Librarie de la Société Anonyme de Publications Périodiques, and Choisy, A. ***Note sur la construction des voûtes sans cintrage pendant la période Byzantine.*** Annales des Ponts et Chaussées. 5 série, 2E sem. 12: 439-449, Pl. 21. Other scholars of this era, such as Grabar, Van Millingen, Texier, and Ward-Perkins/Talbot Rice, pertain more to typology (see Chapter 2 for references), and have not stood the test of time regarding construction methods.

184. See Theocharidou, K. (1988) ***The Architecture of Hagia Sophia, Thessaloniki: from its erection up to the Turkish conquest.*** Oxford: BAR International Series E. Velenis and Feist challenge several of her conclusions. In ***Middle Byzantine Churches of Thessaloniki*** and the ***'Chronology of the church of Hagia Sophia in Thessaloniki through the epigraphic data'*** (see footnote # Velenis directly challenged Theocharidou's dating of the church. Feist's monograph on Transitional Churches, also already referenced, generally challenges the prevailing assumptions/conclusions about disaster damage. She questions the 'earthquake scenario' as leaving too many inconsistencies in the hard evidence, to which I refer during this chapter. Instead she suggests other reasons for 're-modelling' the church such as the problem of maintaining a huge timber roof during times of war and reduced population and monetary revenue.

185. See Lancaster, L. (2015) ***Innovative Vaulting in the Architecture of the Roman Empire: 1st - 4th Centuries C.E***. New York: Cambridge University Press. She describes the developmental stages of Roman vaulting which grow into the later Byzantine techniques. Relevant to this thesis is Lancaster's discussion of the use of centering combined with setting the bricks in the patterns used for uncentered vaulting (ibid. 2015, pp. 58-640).

186. See Moropoulou, A. Biscontin, G. Bakolas, A. Biskibou, K. (1997) **'Technology and Behaviour of Rubble Masonry Mortars'** *Construction and Building Materials* Vol. 11:2 pp. 119-129. Elsevier Science Ltd. Properties of Byzantine mortar, fundamental to the experience of constructing the church, are examined with reference to Moropoulou's technical analysis, along with the author's fieldwork.
See also Moropoulou, A., Cakmakb, A.S., Biscontin, G., Bakolasa, A., and Zendric, E. (2002) **'Advanced Byzantine cement based composites resisting earthquake stresses: the crushed brickylime mortars of Justinian's Hagia Sophia.'** Construction and Building Materials 16, pp. 543–552. A. Moropoulou's technical analysis of the Byzantine mortars reveals *'high tensile strength and low value of modulus of elasticity and density'* and unique properties due to their highly pozzolanic, lightweight aggregate. She believes the very thick mortars, and their terracotta aggregate that is softer than gravel ones, contibute to their seismic resistance. Her work provides detailed analysis of the physico-chemical qualities of the mortars, which can yield certain clues about how they were mixed and worked during construction. In a 1997 article she seems to suggest a stiff, low water mix that is hydrated in-situ (ibid. p. 119). Retrospective analysis such as hers makes it possible to develop hypotheses about the techniques of building.

187. Buchwald more specifically addresses the atmosphere of innovation applied to design and

Roman aesthetic theory, as it added in Christian theological *theoria*, modified the methods of its masons, especially in Asia Minor, in a context where the seemingly unrelated could converge.[188] The space of the church is compared to Isar's analysis of 'the Byzantine *chora*'.[189] The building of the church's *chora* is shown in this chapter to be generated from a single point. The composition of the church's mosaics is compared with the geometry of the building.[190] How the *architekton* or Master mason set out the 'cube' of the building from a central point as a geometric 'frame', is shown through drawings and with reference to Buchwald and Oikonomou.[191] The masons constructed the church around the central axis, upwards and inwards.[192] In the words of Constantine of Rhodes' *ekphrasis* (In: James, 2012, pp. 58-59, l. 573) 'he raised, he stretched out, he unfolded it'.[193] Yet for the mason this is not, as Ingold puts it, 'the notional point-to-point connectors of Euclid', but arcs made with heavy stones, bricks and mortar.[194] The work of the mason who builds the *chora* of the church, is compared with the *ascesis* of the monk 'who aspires to circumscribe the incorporeal

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construction in Asia Minor during the Transitional Period in his essay, **'Western Asia Minor as a Generator of Architectural Forms in the Byzantine Period: Provincial Backwash or Dynamic Centre of Production?'** In: Buchwald, H. (1999) ***Form, style, and meaning in Byzantine church architecture***. Aldershot: Ashgate Variorum.

188. The culture connecting different traditions in the spirit of innovation is evident from the Hellenstic Empire onwards, eventually stabilizing in the Christian synthesis.

189. See Isar, N. (2004) **'Chorography (Chôra, Chôros, Chorós) - A performative paradigm of creation of sacred space in Byzantium.'** In: *Hierotopy: Studies in the Making of Sacred Space.* pp. 59-90) Moscow: Radunitsa. and
Isar, N. (2009) **'Chôra: Tracing the Presence'** *Review of European Studies* 1:1 pp. 39-55

190. This has been addressed in Ch. 4 with reference to Cosmas Indicopleustes' cosmological figure of the vaulted heavens on a earthly cubic base; and also by De Santillana and Duchend's explanation of astronomy's figures.

191. Buchwald (1999, p. 311) writes that, *'the architecture and the images which adorn it are uniquely inseperable parts of a single conception.'* He makes his points about the geometry of Middle Byzantine churches in relation to Demus' views on iconography in its spaces. In his essay on the *Design of the Aisled Basilicas in Asia Minor* he writes that *'In Classical Temples, and other buildings each dimension was carefully adjusted to be in harmony and in scale with each other dimension'* (ibid., p. 26) and in his other essays he explains the reformulation in Asia Minor which resulted in the Byzantine conception of a church's geometrical 'frame'.

192. Liturgy has predominantly horizontal movement, the icon is mainly read in vertical movement, though both have a measure of the opposite. Masonry domes and vaults have a concentric movement which combines the horizontal and vertical.

193. Constantine is describing the church of the Holy Apostles in his ekphrasis of the 10th century. The church was built in the 6th century, though he is referring to a more generic and well-known 'frame' of features of the conceptual Byzantine church. His translator's commentary remarks *'He decribed how this architect laid out the plan on four sides from one mid-point, like a cross (lines 545-569)'* (James, 2012, p. 186). Constantine's description of the church generated conceptually through the 'constructive lines' of the architect / Master mason is mainly discussed in Chapter 2. In this chapter this becomes tangible as the masons experience building the church.

194. Ingold (2013, p. 54). Ingold's book on Making is primarily discussed in Chapter 2, though referenced in Chapter 5.

in a dwelling of flesh'.[195] The chapter follows the building of the church stage by stage, and it follows the masons' personal journey from lifting heavy weight through learning the unity of the arches, vaults, and domes, to listening to his earthly material, to building a work that is *acheiropoeiton* with *anenergesia*, by the dome's completion. As the mason lifts the heavy weight of earth, he is also lifting the weight of the heart but, 'The hesychast is one who says: "My heart is strengthened" (Ps. 57:8).[196] The heaviness of the work in constant engagement with the earthen building materials wears down his rebellion. At the same time his perception of unity is increased by building the unitary structures of arches, domes, and vaults. The mason's experience constructing the defining features of the Transitional church can be seen as analogous to the liturgical ritual, the symbolic imagery of iconography. The conceptual architecture of the *ekphraseis*, and the figures of theology in the mystagogic method of Dionysios are cross-referenced with the masons' anagogy. [197] For example, Gazetas and Botsis provide the engineering logic for digging deep, base-isolated foundations to mitigate liquefaction risk in earthquakes.[198] At the same time Barry's article 'Walking on Water' explains the builders' beliefs about the primordial waters from which God created the earth and their embodiment in the material of marble.[199] Analogies between the walls' and piers' physical and spiritual stability are brought together; in Lossky's view of the Trinity; in the tangible qualities of solidarity experienced by the mason; in protection through the Theotokos according to Pentcheva; in the unity of opposing light and shade; in the earthly cubic geometry made by the piers.[200]

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195. St. John Climacus, Step 27, In: Meyendorff, J. (1974) ***St. Gregory Palamas and Orthodox Spirituality***. New York: St. Vladimir's Seminary Press

196. The volumes of the Philokalia contain advice on ascetic discipline which were copied and passed down through generations of Orthodox monks, and recently translated in full. See Philokalia (1979) The Philokalia: The Complete text, Complied by St. Nikodemos of the Holy Mountain & St. Makarios of Corinth, Vols. I and II, Palmer, G., Sherrard, P. and Ware, K. eds., Translated by Palmer et al. London: Faber and Faber

197. The *ekphraseis* from the 6th century, themselves dedicated to the art of translation, assist in drawing analogies between the symbolism of the cross-domed church's component parts, and the experience of the mason. For the most part, the LOEB of Procopios' Buildings, and Mango's translation has been used, see note #105.

198. Gazetas, G. and Botsis, J. (1981) **'Local Soil Effects and Liquefaction in the 1978 Thessaloniki Earthquakes'.** International Conferences on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, 15, pp. 1205-1213, provide necessary structural engineering and documentation of the local subsoils and thier behaviour.

199. See Barry, F, (2007) **'Walking on Water: Cosmic Floors in Antiquity and the Middle Ages**', *The Art Bulletin* LXXXIX:4, pp. 627-656 Belief in the cosmic circumfluent ocean is evidenced in the ekphraseis of Paul the Silentiary, the Sougitha, and Kosmas Indicopleustes.

200. The cubic geometry established by astronomy in Santillana and Duchend (Ch. 4, footnote, and elaborated as cosmology and geography by Cosmas Indicopleustes, is seen in this chapter from the point of view of construction through Constantine of Rhodes' *ekphrasis*. See James, L. (2012) ***Constantine of Rhodes: On Constantinople and the Church of the Holy Apostles***.

As he 'spins out' the chora around a single point, the mason recieves a tactile lesson in the Incarnation.[201] His own materials and method teach him what Cucic calls 'the theology of light'.[202] He builds the symbol for light as the 'radiant frieze', symbolising that the heavy impenetrable earthly material with which he has been labouring to build the church's walls and vaulting, is the divine light. As he builds the *chora* around a single point he is able to touch Philo's words that, 'God created space (χώρα) and place (τόπος) simultaneously with bodies (σώματα)'.[203] The Incarnation of Christ made him certain that this *chora* of the *naos* that he is building is also the body of God, since a mason of the 8th century, knew that 'human is created from earth' in the image of God. So how could he dare to build the 'unlike image' of Christ with the material of earth unless he too inhabits that *henosis*? He must 'see' that the impenetrable, heavy walls really are both the created and the 'uncreated' light. This is his masonry 'communion' that he experiences with his fellow builders living, as it were, St. Dorotheus' description of centre and circumference as he builds towards the centre of the dome. 'Attentiveness is the heart's stillness, unbroken by any thought,' advised St. Hesychios in the Philokalia.[204] When he removes the compass, the entire creation built with *anenegergesia* that is *acheiropoeiten* rings like a bell, resounds with the praise of the community in liturgy.[205]

Chapter 6: Conclusions and future applications of the research

The Conclusion of this thesis reiterates my research questions, 'What is the relationship between masonry architecture and theology?' and 'How can a building

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Farnham: Ashgate Publishing

201. cf.Lidov, A. (2011) **'The Whirling Church. Iconic as Performative in Byzantine Spatial Icons'** In: *Spatial icons. Performativity in Byzantium and Medieval Russia*. Lidov, A. ed. Moscow: Indrik

202. Curcic's interpretation of the 'radiant frieze' as a symbol for the earth being the divine light is discussed in Chapter 2. See Ćurčić, S. (2012) **'Divine Light: Constructing the immaterial in Byzantine art and architecture'.** In: Wescoat, B. and Ousterhout, R. eds. *Architecture of the Sacred: Space, Ritual, and Experience from Classical Greece to Byzantium.* Cambridge: Cambridge University Press.

203. Wolfson (1962, p. 309). See Wolfson, H. (1962) ***Philo: Foundations of Religious Philosophy in Judaism, Christianity, and Islam.*** (Vol. 1), Cambridge: Harvard University Press. Wolfson was uniquely able to pinpoint the contribution of Jewish thought to the Hellenistic culture in which he lived in Alexandria and to understand his interpretations from the Jewish scholarly perspective.

204. St. Hesychios (1979) **'On Watchfulness and Holiness'**, In: *The Philokalia*, Trans. Palmer et Al, (Vol 1, p. 163)

205. See Theokritoff E. & G. (2010) **'Liturgy, cosmic worship and Christian cosmology'** *Sobornost* 32:1 Oxford: Sobornost and
Theokritoff, E. (2008) **'Creator and Creation'** In: Theokritoff, E. and Cunningham, M. eds. *The Cambridge Companion to Orthodox Christian Theology.* Cambridge: Cambridge University Press

be the 'house of God'?' I reflect on my methodology of comparison and translation between liturgy, iconography and architecture in the case study church of Hagia Sophia, Thessaloniki. I draw conclusions from this research about experiential knowledge, and the areas where thesis makes a unique contribution. I consider how the fruits of this thesis could be useful to humanity in the present and future. Potential areas are highlighted where the principles and practices researched could move from a historical reconstruction to something relevant to modern life. In the field of architecture the education of the student and the role of the architect could develop through analogy and method, *theoria* and *mystagogia*.

The raising of a true human being has been traditionally seen as the goal of religious mystagogy. As Kakalis writes, 'The aim of the ascetic is to return back to the mundane sphere, transformed.' (Kakalis, 2020, p. 11)[206] I conclude that a masonry mystagogy exemplifies how the refinement of a true human being could be combined with the making of useful product like a building. I then consider how this way of learning might be transferred and translated for our present day methods of designing, building, innovation of sustainable technologies, and making (*poesis*) of all kinds. [207]

Appended to this thesis are a Glossary, Bibliography, and Appendix.

In the spirit of research into the possible archetypes that are put into motion within the person of the mason, I have conducted several interviews with living masons who work directly with the element of Earth, as stone, bricks, clay, sand and lime mortars and so on, asking them about the common thread in their experience. These interviews are quoted in this thesis, and their words can be found in the Appendix.

206. See Kakalis, C. (2020) Architecture and Silence, Oxford: Routledge. Kakalis' descriptions of the liturgy in an Athonite Katholikon focus on the contemporary and embodied experience in relation to the architecture.

207. This thesis will try to show that one cannot in the end seperate praxis and poesis, though the distinction has been made in the Greek language and was further seperated, as Curtius describes. He writes of *poesis* from the Western point of view, which imbues the world into which this thesis must return, since our modern age has been shaped by this world-view: *"The concept of "making" in the sense of "producing" finally acquired pregnant meaning in Aristotle's systematization of the various branches of knowledge. He divides philosophy into "theoretical," "practical," and "poietic". In Aristotle's application of his system there are inconsistencies with which we are not here concerned. But the distinction between the "practical" and the "poietic" disciplines is important. "Praxis" has to do with human action (in Scholastic terminology agibilia), "poiesis" with "making" (factibilia), under which fall the useful arts and the fine arts: technology and what (following Aristotle) we call "poetics" in the restricted sense."* (Curtius, 1973, p. 146 -147)

2.0 THE CONCEPTUAL HAGIA SOPHIA

2.1 HAGIA SOPHIA IN THESSALONIKI AS A TRANSITIONAL PERIOD CHURCH

The first nine centuries were formative centuries for Christianity. From the early fourth century the essential religious themes were fought over and decided by the theological councils, and by the ninth century the last great debate of iconoclasm was settled.[1] The contentious issues were centered around the relationship between God and creation and all the symbolic theology between these, such as the divine and human nature of Christ, the role of the Holy Mother and the incarnation, the nature of representation (the image), and every aspect of the administration of this symbolic theology into human society. In architecture too, by the 6th century AD the concept of the domed cathedral had begun to replace the basilica as the place of assembly for the liturgy, but between concept and tangible reality some centuries of research and development were required.

In earlier centuries, martyria for the dead and baptistries for intitiation were built with domes, continuing ancient tradition of the tholos and nymphaeum.[2] Christian martyria incorporated an altar for ceremonial, and sometimes an apse or niche to give an orientation. The people, meanwhile, assembled in basilicas. The Basilican cathedrals modified the preceding Roman civic basilicas, while not entirely breaking with the tradition of rectangular temples. The spread of the domed martyrium as a place of worship co-incided with the dissemination of the work of Dionysios the (pseudo) Areopagite throughout the Greek world, making both Dionysios' works of the late 5th century and the timeless ancient domical architecture vital for materialising the formal religion.[3]

1. By 554 AD, the first five of the essential seven ecumenical councils had been held. They debated issues of the divine and the human nature of Christ, and whether Mary was the 'mother of God'- Theotokos, or the 'mother of Christ'. Arianism was non-trinitarian and took hold in Western Europe; Nestorianism (dual nature of Christ) was centered in Antioch; Monophysitism (single nature of Christ) was centered in Alexandria. All three were eventually deemed unorthodox. The Nestorians emigrated to the Sassanian empire and spread their mission further East, while the Monophysites separated themselves as Copts. The last of the early church's ecumenical councils was held in 787 AD, shortly after the completion of Hagia Sophia Thessaloniki.

2. See Baldwin Smith, E. (1971) ***The Dome: A Study in the History of Ideas***. Princeton, New Jersey: Princeton University Press. Chapter III 'The Masonry Dome and the Mortuary Tradition in Syria and Palestine' (pp. 45-60) and Chapter V 'The Domical Churches: Martyria' (pp. 95-131).

3. See Grabar, A. (1972) *Martyrium: Recherches sur le culte des reliques et l'art Chretien Antique.* London: Variorum Reprints (1st edn. 1943), for his comments on the spread of the domed Martyrium as a place of worship. The martyrium was a type of domed *tholos* erected to remember a saintly person such as John the Baptist, the Virgin, Saint Euphemia, Khidr-Elias, and more. The Rotonda in Thessaloniki, for example, was a pre-Christian domed *tholos* intended as a mausoleum for the Roman emperor Galerius.

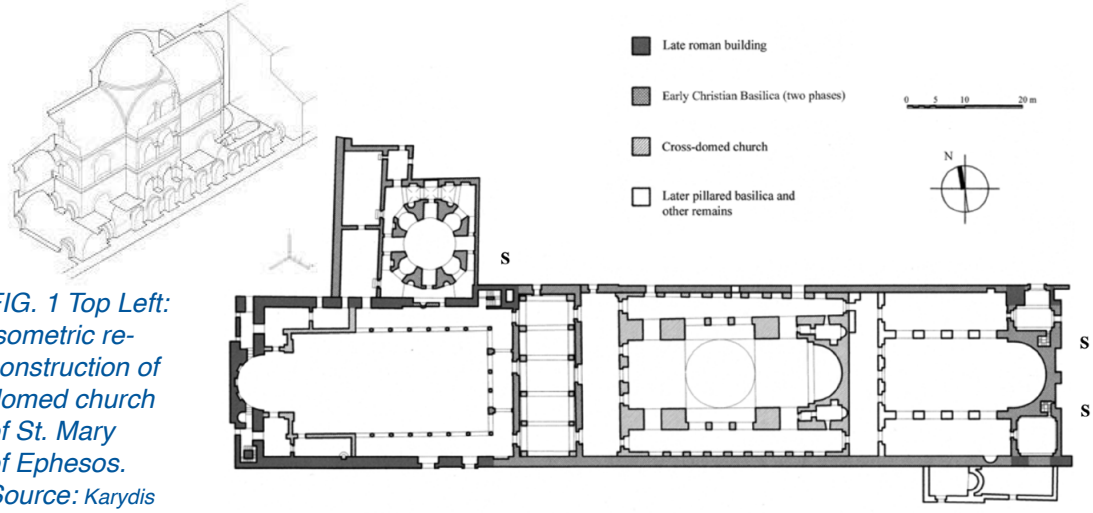


FIG. 1 Top Left: Isometric re-construction of domed church of St. Mary of Ephesos. Source: Karydis (2019, p. 38)

Figure 2. Ephesos: Church of St Mary: Plan showing the main phases of construction. Remains of staircases are shown with an 'S' (drawing by C. Vasilikou, 2009)

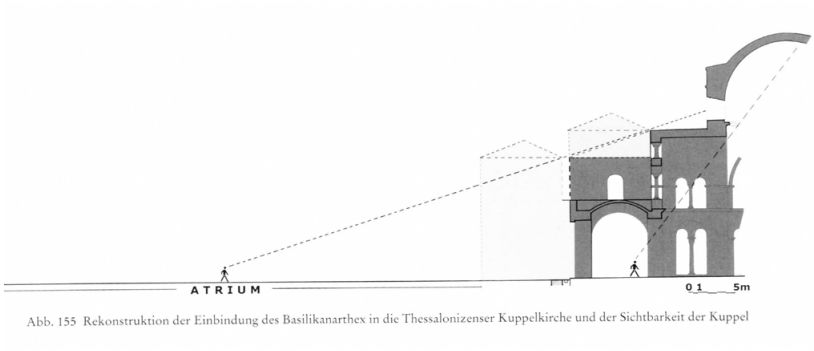


Abb. 155 Rekonstruktion der Einbindung des Basilikanarthex in die Thessalonizenser Kuppelkirche und der Sichtbarkeit der Kuppel

FIG. 2 Above: St. Mary of Ephesos, in phased construction (as noted on drawing) Source: Karydis (2019, p. 26)

FIG. 3 Left: Sight-lines from basilican atrium of Hagia Sophia in Thessaloniki, verifying relative heights of the original narthex and exo-narthex to the windows around the dome. Source: Feist (2019, table 71).

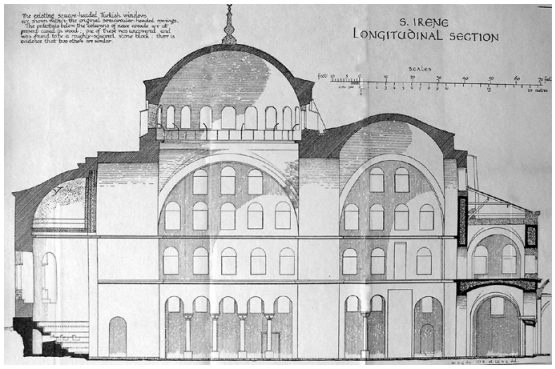
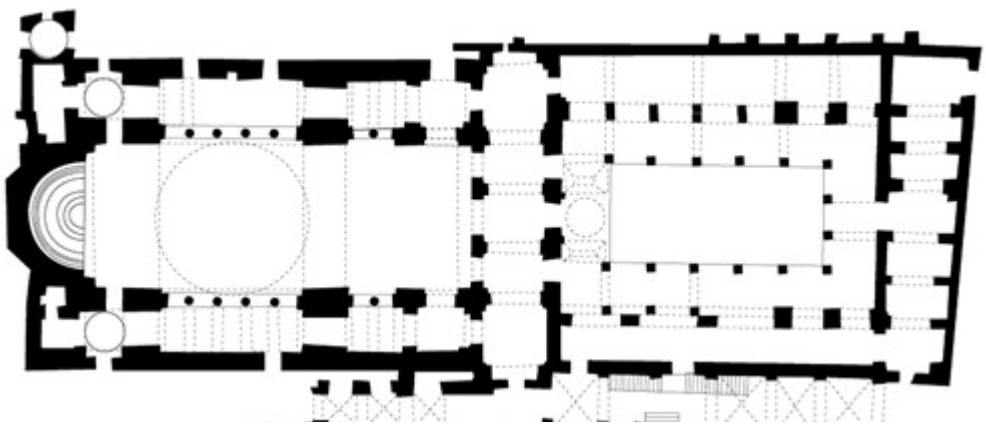


FIG. 4 Left: Section of Hagia Eirene Source: Van Millingen (1912)

FIG. 5 Bottom: Plan of Hagia Eirene showing the 8th century reconstruction of the cross-domed core within the 6th century adaptations of the 4th and 5th century basilicas. Source: Peschlow (1977)



It is no accident that the Transitional period (c. 600-900 AD) has been called the Byzantine 'dark ages'. Its fragmentary physical remains and elusive historical record have challenged archaeologists and art historicans since Félix Marie Charles Texier (1802-1871), Auguste Choisy (1841-1909), John Bryan Ward-Perkins (1912-1981), and David Talbot Rice (1903-1972) laid the groundwork of the first detailed building surveys and early hypotheses.[4] The earliest survey of Hagia Sophia Thessaloniki was done by the antiquarian scholar of the 19th century Texier, as part of his meticulous survey of the archipelago of partial Byzantine buildings, which could be discerned throughout the Ottoman empire, semi-submerged under layers of building conversions. Their work, clearly done with love of their subject, set the stage for the major 20th and 21st century contributors to the field of Byzantine masonry architecture. Due to their accuracy and detail, their surveys, especially those of Auguste Choisy (1841-1909), are still the foundation of much scholarship.

Later in the 20th century, Cyril Mango and Richard Krautheimer (1897-1994) published what became the classic works on Byzantine architecture. Krautheimer's *Early Christian and Byzantine Architecture* is still the most inclusive description of the physical buildings in one book. His methodical and comprehensive survey grouped buildings together according to periods in history, formal types and physical regions. From his work one can get an overview of the designs of churches across the empire and across the centuries.[5] Cyril Mango (1974), too, in his prolific body of work tends to collect and present documents and archaeological material suggestively.[6] In the late 20th century Kalliope Theoharidou was present at the excavations of M. Kalligas after the 1986 earthquake in her native Thessaloniki, and she produced a comprehensive monograph on Hagia Sophia. Her beautiful surveys have also become the basis for further scholarship. However, since the time of these scholars, research has reconsidered many of the earlier assumptions on the Transitional Period. In the

4. In general, the antiquarian scholars of the 19th and 20th centuries who surveyed the physical remains were polymaths who noted that during the centuries in which the Empire adopted Christianity, the trabeated temple-style was dropped and the arch became fundamental and emblematic of Christian architecture. This does not answer the question of why the arch was adopted. The 19th and 20th century scholars explain that the Christians avoided using the temple style in order to distance themselves from former polytheist religions. They conclude that this was the reason for adopting other Roman building typologies such as the basilica, and ones which used arches, vaults, and domes. While this may contain some truth, this does not engage with the epistemology of the early Christian theologians.

5. A true scholar, Krautheimer (1986, p. 285) wrote in his time that, *'it is next to impossible to trace a development either from one church type to another'* based on the material evidence, and that, *'rather than attempting rash answers to such questions, it seems preferable for the time being simply to present the material.'*

6. For example in Mango (1985) *Byzantine Architecture* he devotes a chapter to 'the Dark Centuries' (pp. 161-193).

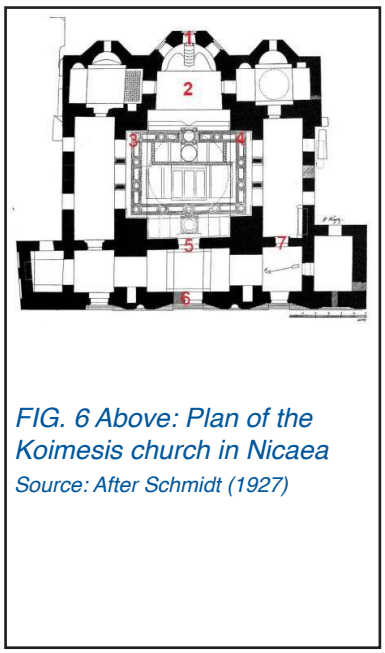


FIG. 6 Above: Plan of the Koimesis church in Nicaea
Source: After Schmidt (1927)

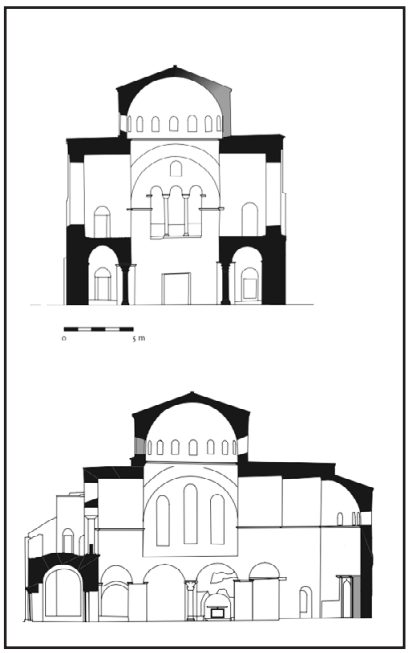


FIG. 7 Top Left: Sections of Hagia Sophia in Vize, Thrace.
Source: Bauer and Klein (2006, pp. 160 & 161)

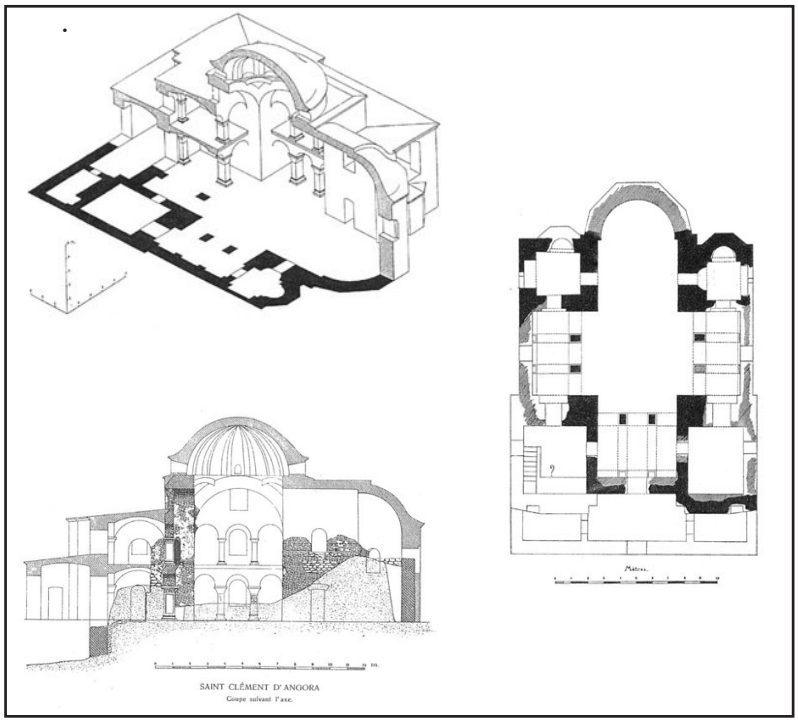


FIG. 8: Middle left: Plan, Section, and Axonometric of St. Clement in Ankara. Its disciplined, logical design shows the essential parts of a transitional church core.
Source: Jerphanion (1928, pl. LXVIII, LXXII, LXVI)

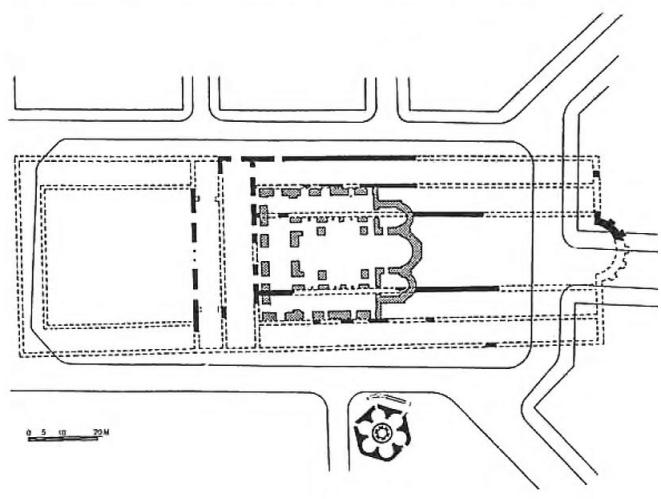


FIG. 9 Below left: Plan of Hagia Sophia, Thessaloniki, showing its position within the basilican church in outline, and the Roman nymphaeum.
Source: After Velenis (2003)

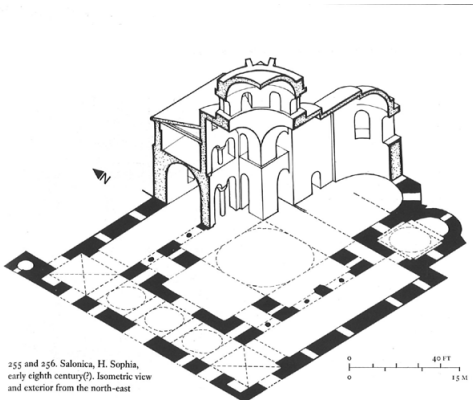


FIG. 10 Below: Isometric of Hagia Sophia in Thessaloniki. *Source: Krautheimer (1986, p. 291)*

spirit of detailed forensic reconstruction of the churches of Thessaloniki, Architect Georgios Velenis (2003), has positioned Hagia Sophia in her context within the architecture of the city and the region in the *Middle Byzantine Churches of Thessaloniki*.

Most recently Nikolaos Karydis' (2019) reconstruction of the developmental stages of St. Mary of Ephesos, and Sabine Feist's (2019) comparative analysis of transitional churches in *Die Byzantinische Sakralarchitektur der Dunklen Jahrhunderte* (Byzantine Sacred Architecture of the Dark Ages) characterise a new view of this period as one of architectural transformation and renewal.

Karydis' work on *Early Byzantine vaulted construction in churches of the western coastal plains and river valleys of Asia Minor (2011)* brings masonry methods into conjunction with his reconstruction of the ruined churches of St. John the Theologian and St. Mary of Ephesos, in particular. Because he is able to study the construction details which are exposed he has described an evolution of construction technology and church design that spans from late Roman to the end of the transitional period.[7] His monograph on *The development of St. Mary of Ephesos from late antiquity to the Dark Ages (2019)* reveals three phases of construction culminating in a cross-domed basilica, which was built within the late Roman basilica. The last phase is 'tentatively attributed to the eighth century' and 'has all the characteristics of a cross-domed church. The similarity with the church of Hagia Sophia in Thessaloniki is striking' (pp. 19-20), he observes.

Feist argues for a similar pattern of development by comparing the way that the early (4th - 5th century) basilicas at St. Eirene in Constantinople, Cumanin Camii in Antalya, the Lower Church in Amorium, St. Mary in Ephesos, St. Nicholas of Myra, Hagia Sophia in Thessaloniki, Hagia Sophia in Vize (Bizye) were converted into domed basilicas and cross-domed churches. By analysing the material and textual evidence and checking proportions and sight-lines, she questions the assumptions of previous scholars concerning Hagia Sophia, since the evidence points to an existing basilica which was not demolished or abandoned, but was consciously integrated with a new, cross-domed core constructed within it.[8] For a time this would have created a hybrid building in which the new church continued to use parts of the old basilica. The old basilica would

7. These churches are St. Mary of Ephesos, St. John the Theologian in Ephesos, Building D at Sardis, St. John in Philadelphia (Alasehir), the Urban Basilica at Hierapolis, the Church of the thermae at Hierapolis, the Urban Basilica at Priene, and the 'Tria Dontia' Basilica in Pythagorion, Samos

8. Evidence that the bricks of the old basilica have been re-used in Hagia Sophia from comes from: Vickers, M. (1973) **'Fifth-Century Brickstamps from Thessaloniki'**, *The Annual of the British School at Athens*, Vol. 68, pp. 285-294, Athens: British School. The basilica's rough grey-green stones were also likely to have been re-used in the new foundations of Hagia Sophia.

have provided not only re-usable building materials and 'spoleia' but an exo-narthex, colonnades and an atrium, and a sacred spring (Roman nymphaeum or 'hagiasma').

Their work picks up the baton from certain earlier scholars of the 20th century. One of the first to employ this style of detailed reasoned analysis, is G. De Jerphanion (1928) who published a monograph 'correcting the principal errors of Texier' on St. Clement of Ankara which he compares with the church of the Koimesis in Nicaea.[9] He reconstructs St. Clement as a two storey, cross-domed basilica with tripartite apses to the east, a narthex, and side galleries which are also part of the cross-domed core. Despite its planimetric similarities with the Koimesis church in Nicaea, Jerphanion (1928, pp. 118-9) notes a difference at the ground floor, that St. Clement of Ankara has the same structure to the south, west, and north. Instead, this is found in the gallery floor of Hagia Sophia in Thessaloniki which is the same on three sides. For baptisms, St. Clement has an ancient underground 'hagiasma' and Hagia Sophia has an ancient 'nympaeum', both to the east and below the foundation level.

Similarly, archaeologist Urs Peschlow's monograph of Hagia Eirene deciphers a monument of complex historical layers; the early Basilica whose atrium and narthex were retained after the fire of 563 AD; Justinian's reconstruction which used large blocks of cut limestone in the walls, and brick vaulting to create a domed basilica; and the 8th century reconstruction after the earthquake of 740 which used alternating brick and limestone bands in the walls, and brick vaulting to remodel the upper part of the church. He links Hagia Eirene not only to Hagia Sophia and SS. Sergius and Bacchus in Constantinople, but also to Basilica B at Philippi (a domed basilica), and to St. John at Ephesos (a cross-domed basilica).

A picture of connected churches in Asia Minor further develops when one considers Hans Buchwald's (1999) series of essays in *Form, style, and meaning in Byzantine church architectur*e. On the one hand he finds a system of proportions, scale and measure in the 'overriding internationalism' of early basilican churches, which could have enabled a quick, easy production by the builders. (pp. 19-30). On the other, he proposes that Asia Minor, 'the bridge between Asia and Europe ... was both a provincial back-wash and a dynamic centre of production' (ibid. p. 200).[10] During the Transitional Period he defines three architectural

9. Jerphanion (1928, p. 143) concludes, based on the sculptural detail, that St Clement cross-domed church was built in the late 5th or early 6th century and ante-dates Hagia Sophia in Constantinople, preparing the way for Anthemius and Isidore's work.

10. In the same spirit is a small but significant book: Ćurčić, S. (2000) *Middle Byzantine Architecture on Cyprus: Provincial or Regional?* Nicosia: Bank of Cyprus Cultural Foundation

developments in Asia Minor which perhaps show evolutions in adding the dome and establishing its centrality culminating in the cross-domed basilica. 'It may be briefly described as the combination of the traditional aisled basilican church plan and a single dominant domed bay in the nave' constructed anytime between the 5th and 9th centuries (ibid. p. 215). Most examples of this type are found in Asia Minor, with Hagia Sophia in Thessaloniki being the exception in Greece, leading him to give the late date of 780-787.[11] He, too, connects the churches of the Koimesis in Nicaea, St. Clement of Ankara, and St. Mary of Ephesos putting them all into the 7th - 8th centuries. He suggests that most domed basilicas were built before the Persian invasion of the early 7th century, while cross-domed basilicas tended to be part of the post invasion reconstruction (ibid. p. 221). Taken as whole, his work implies that, despite changes in construction technology and design which down-sized the new churches of the Transitional period, the existing building industry adapted rather than abandonned its well-developed and useful aspects, such as a system of proportions that enables mass production, methods that allowed speed and ease of construction, and being cost-effective.[12]

In *Eastern Medieval Architecture* Robert Ousterhout (2019, p. 251) concurs that in Hagia Eirene the 6th century dome was 'destroyed in the earthquake of 740'. Therefore 'almost all of its superstructure - and its reformulated structural system' was built two hundred years after the Justinianic era. Following up on passages in Andre Grabar's (1984, pp. 167-200) earlier *L'Iconoclasme Byzantin*, he notes close structural and theological programmatic similarities between three 8th century churches: Hagia Sophia in Bizye (Vize), a domed basilica in Thrace;[13] the Koimesis church in Nicaea, built 'no later than 726' (Karydis, 2019, p. 18); and Hagia Sophia in Thessaloniki. They all show traces of a similar iconoclastic cross in the apse, and the text of their mosaic inscriptions are closely related.[14] Referencing cultural, liturgical, economic, iconographic, and epigraphic context, Ousterhout (2019, p. 250) characterises the transitional period as one of

11. Buchwald (1999, p. 222) elaborates, *'The church of St. Sophia in Salonica seems to be an isolated example of the cross-domed basilica outside Asia Minor. Because of its late construction date, in the last quarter of the 8th century, it seems possible that its forms were designed under the inspiration of the earlier buildings using a similar plan in Asia Minor. Indeed St. Sophia could have been built by a Master mason, or even with the aid of crews from Asia Minor, for little building on a monumental scale seems to have occured in Northern Greece in the generations preceding its construction and expertise may well have been imported.'*

12. According to Buchwald (1999, p. 26), *'St. Sophia in Salonica and the domed phase of St. Mary of Ephesus are much larger than any known medieval inscribed cross church'.*

13. Hagia Sophia in Bizya (Vize) according to Cyril Mango (1968, p. 13) may well, *'pertain to the period of Byzantine expansion into the Balkans in the late 8th and 9th century, a period very poorly represented in terms of architectural monuments but which may also have produced Hagia Sophia in Salonica'*

14. See Appendix C of this thesis.

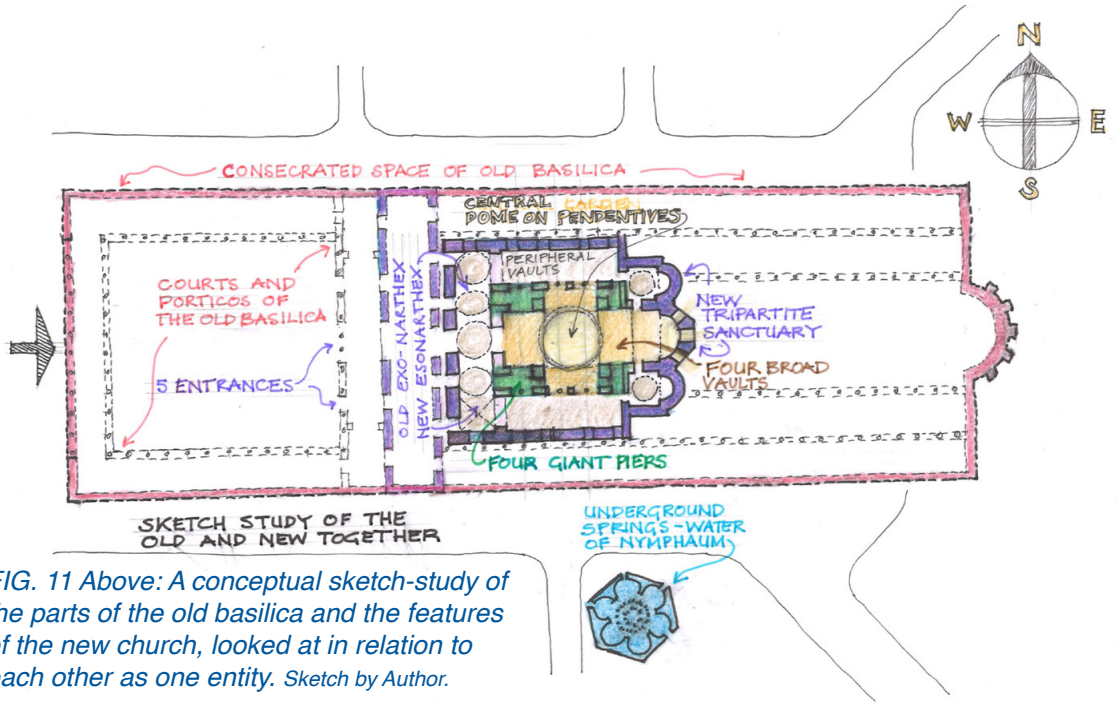


FIG. 11 Above: A conceptual sketch-study of the parts of the old basilica and the features of the new church, looked at in relation to each other as one entity. Sketch by Author.



FIG. 12 Left: North side of the present church showing the basilican foundations running parallel. If the basilica outer wall and exo-narthex were intact, this passage could have served to bring the communion gifts of bread and wine from the prothesis apse to the narthex. The blocked up door in the church wall mid-picture may have been the entrance from the archbishopric whose remaining walls form part of the archaeological site and was probably attached to the consecrated area. The large square holes on both north and south walls may have carried the beams for a stoa within the basilican walls. Photo by Author.



FIG. 13 Below Right: Icon, painted on wood, Presentation of the Virgin in theTemple. Joachim and Anna present the Virgin to the priest. The architectural background has a central domed ciborion on four columns within a consecrated walled space. The Virgin is also on a heavenly throne in the righthand apse. The priest is standing below to the right on his synthronon. The people have entered through the left hand side. © The Trustees of the British Museum. (Asset number 1082591001)

'major social and political transformations' resulting in 'dramatic and permanent changes in Byzantine religious architecture'. At the same time Karydis and Feist emphasise the continuity of the sacred site and a process of evolutionary, rather than sudden, change.[15]

As a result of these scholars' re-interpretation of the archaeological evidence one can more clearly see a pattern of development, connecting Hagia Sophia Thessaloniki with Hagia Eirene, Hagia Sophia in Bizye (Vize), the Koimesis church at Nicaea, St. Clement of Ankara, St. Mary of Ephesus, the lower church at Amorion as well as Cumanin Camii in Antalya, and St. Nicholas at Myra primarily. In the context of church design this suggests a shared architectural culture related to the religious culture. Following the transitional period, Krauheimer, Ousterhout, Buchwald, and Mango, all concur that the cross-domed basilica evolved into the dome-in-cross church which came to typify the Middle and Late Byzantine churches of the Orthodox Christians.

The churches of St. Mary of Ephesus, St. Nicholas of Myra, St. Clement of Ankara, Cumanin Camii in Antalya, the Lower Church in Amorium, all bear witness to Asia Minor being 'both a provincial back-wash and a dynamic centre of production' (Buchwald, 1999, p. 200), which we can now extend to Hagia Sophia in Vize (Bizye), and Hagia Sophia in Thessaloniki.

This trend in recent scholarship shows that certain features, such as a dome on pendentives, on four masonry piers covered by vaults, were incorporated into the earlier basilica design transforming its *topos* from within. The common pattern tells us that a coherent new formal language was being implemented, centered on the dome. These changes combine material economy with the 'divine economy'.

2.2 HAGIA SOPHIA AND TRANSITIONAL CHURCHES, DEFINITIVE FORMS AND FEATURES

Of the transitional period churches, Hagia Sophia Thessaloniki is the most completely preserved example, and the only one still in active use. For this reason it provides the 'Rosetta Stone' quality that opens the possiblity for the exploration of this thesis. It provides a place, a *chora*, for the field of translation between analogous themes in the architecture, liturgy, and iconography. The new features contributing to this evolving ecclesial space are ones which Hagia Sophia, Thessaloniki shares with the development of the churches in Asia Minor:

15. Referring to St. Mary of Ephesos, Karydis (2019, p. 16) writes, *'The vaults of the church were not supported entirely on newly built walls and supports. The external walls of the previous basilica were largely maintained and integrated in the new structure.'*

◊ Retaining the whole enclosure of the basilica as consecrated space, often with parts of the walls remaining;
◊ inserted within it, a 'cross-domed core'; a central dome set on pendentives, bearing on four bounding arches and barrel vaults oriented in four cardinal directions, and supported on four large piers;
◊ secondary domes and vaults over auxilliary/peripheral spaces such as aisles, narthex, prothesis/proskomide.
◊ a tripartite sanctuary (of three apses) in the east (connecting to side aisles) with three windows in the central apse carried over from basilican design;
◊ retaining the sense of a longitudinal axis culminating in a single eastern apse with three windows;
◊ an upper level gallery around the naos, usually on three sides;
◊ a vertical axis within the nave, at the crossing under the dome
◊ a narthex connecting into older basilican colonnades as an exo-narthex.
◊ re-purposing basilican colonnades and walls;
◊ the basilican atrium as a forecourt.
◊ an ancient, underground spring of sacred water at the site (hagiasma)

Buchwald (1999, p. 210) sees 'the modular principle, as a dominating feature of Byzantine churches' writing of the specific architectural feature of the dome on a square base. If we understand the architectural changes of the Transitional period to include multiple concurrent reasons that are social and economic, ideological and spiritual, one might apply Buchwald's observation to all the above features, as a 'conceptual modular principle'.[16] The context of social changes, drastic loss of population due to plague, economic loss from wars, loss of lands, and natural disasters, which scholars like Mango and Ousterhout describe, were coupled with the responses to cope with these challenges. The restructuring of the empire, imperial ideology and popular movements, a changing client base, an evolving and adapting liturgy, an evolving theology, the debate over what constitutes an *eikon*, or image, and changes in construction practices all contributed to the vast jigsaw puzzle of how and why the longitudinal basilica merged into a centralised domed *naos*.

Of the transitional churches in Asia Minor, Hagia Sophia shares the name only with Hagia Sophia in Bizye, though if we include the 6th century churches, there are the Hagia Sophias in Constantinople and Edessa. In his brief but succinct writings on Thessaloniki's churches, Velenis (2003, p. 63) describes Hagia

16. The Transitional period assimilated changes in liturgy (see Ch. 3) and its associated artifacts, changes in theology regarding its formal representation in religious imagery (see Ch. 4), and changes in church architecture based on masonry construction technique (see Ch. 5).

Sophia as 'implanted' in the heart of the city.[17] There had been no previous church of Hagia Sophia on the site; the earlier 5-aisle basilica was dedicated to St. Mark. The name itself, 'Hagia Sophia', means Divine Wisdom in Greek. Churches dedicated to Sophia did not gain their name by being built around the relics of a saint or martyr.[18] Sophia, meaning 'wisdom', is an abstract noun and churches named after 'Holy Wisdom' were dedicated to a concept, as metropolitan cathedrals.[19] Hagia Sophias were locations where spiritual wisdom (*sophia*) was built into the community symbolically, via architecture, ritual, iconography, and literary *ekphrasis*.[20] Etymologically, the word *Sophia* had the connotation of skill, a hands-on wisdom, not a purely mental one, thereby connecting spiritual and hands-on wisdom.[21] In Christian thought *Sophia*, was one of God's attributes, described in the 'Divine Names' of Dionysios the (pseudo) Areopagite in the 5-6th century (see Fig. 9).[22] Also, Procopius of Caesarea's 6th century eulogy to Justinian's church names *Sophia* as an attribute of God,

> … the church of the Christians, which the people of Byzantium call Sophia, an epithet for God, by which they call His temple … (Procopius 1954, On Buildings I.i.21, LOEB)

17. (Velenis, 2003, p. 63) *'πρόκειται λοιπόν, για ένα μνημείο "εμφυτευμένο" στην καρδιά της Θεσσαλονίκης, το οποίο εμελλε να επηρεάσει τη μεσοβυζαντινή ναοδομία του ευρύτερου μακεδονικούς χώρου και να δημιουργήσει τις προϋποθέσεις για την ανάπτυξη μιας αυτόνομης σχολής.' [Therefore it was intended as a monument 'implanted' in the heart of Thessaloniki, whose future it was to influence the Middle-Byzantine church construction of the wider Macedonian area and create the conditions for the development of an autonomous school.]* (Translation by author)

18. Nor were they dedicated to the Holy Mother (Panaghia, Theotokos) or Christ as Saviour. See Glossary for Panaghia, Theotokos

19. Sophia, a feminine abstract noun, could not simply be personified and sculpted into a statue as might have been done in pre-Christian times. In ancient greek, concepts such as 'victory', 'love', 'justice', 'strife', 'memory', 'safety' 'creation', 'nature', 'hope', 'time', 'destiny', 'wisdom', were personified often in feminine form but sometimes as masculine.

20. See Glossary for *ekphrasis*

21. Thus the concept of Sophia allowed the ancient skill-based wisdom carried through the masons of the Roman empire to express itself in the Christian churches. See Liddell, H.G. & Scott, R. (1940) *A Greek-English Lexicon.* Revised Jones, H.S. & McKenzie, R., Oxford: Clarendon Press: *'σοφία , Ion. -ιη, ἡ, prop. A) cleverness or skill in handicraft and art, as in carpentry, τέκτονος, ὅς ῥά τε πάσης εὖ εἰδῇ ς. Il.15.412; of the Telchines, Pi.O.7.53; ἡ ἔντεχνος ς., of Hephaestus and Athena, Pl.Prt.32 1d; of Daedalus and Palamedes, X.Mem.4.2.33, cf. 1.4.2; B) skill in matters of common life. sound judgement, intelligence, practical wisdom, etc., such as was attributed to the seven sages, like φρόνησις, Thgn.790,876,1074, Hdt.1.30,60; ἡ τῶν δεινῶν ς., opp.ἀμαθία, Pl.Prt.360d; τὴν τότε καλουμένην ς., οὖσαν δὲ "δεινότητα πολιτικὴν καὶ δραστήριον σύνεσιν" Plu.Them.2..."*

22. *'In The Divine Names I have shown the sense in which God is described as good, existent, life, wisdom, power, and whatever other things pertain to the conceptual names for God. In my 'Symbolic Theology' I have discussed analogies of God drawn from what we perceive.' (Dionysios, 1897, MT III: I, p. 91) "Εν δὲ τῷ Περὶ Θείων Ὀνομάτων, πῶς ἀγαθὸς ὀνομάζεται, πῶς ὤν, πῶς ζωὴ καὶ σοφία καὶ δύναμις καὶ ὅσα ἄλλα τῆς νοητῆς ἐστι θεωνυμίας. Ἐν δὲ τῇ Συμβολικῇ Θεολογίᾳ, τίνες αἱ ἀπὸ τῶν αἰσθητῶν ἐπὶ τὰ θεῖα μετωνυμίαι ...' (ibid. MT III: I, Κεφ. Γ)*

Later, by the time of Maximos the Confessor in the 7th century, Sophia came to be associated with the divine person of Christ as did all the divine attributes. In his Mystagogia, Maximos equates the church with the illuminated human being by specifically using the non-gendered word *anthropos* (human, person) when he equates the entire synaxis of both men and women (*ekklisia*), with the church building (also *ekklisia*).[23] As I hope to show in the next chapters, the church of Hagia Sophia in Thessaloniki was a mnemonic and an aid to prayer, embodying theology through contemplation (*theoria*) and action (*mystagogia*).[24] As I will show in Chapter 4 on iconography, masculine and feminine were assigned opposite directions within the church building, but brought together as a unity by the centralised design in whose *naos* the concept of the illuminated human (*anthropos*) was projected. By association, the whole building acquired the personality of *sophia theou* (the wisdom of God).

In the interests of opening a conversation that yet has not yet been had in earnest, one can begin to link each of the features of Hagia Sophia, as a transitional church, with analogous ones found in iconography, liturgy, *ekphrasis* (verbal descriptions of the architecture), philosophy and ultimately theology. The angle with which this thesis can contribute to the discussion is by proposing some connection points between theology and the art of making a masonry building, supported by a comparison with the analogous relation in liturgy and iconography. The connections that I make in this thesis are done in the spirit of starting a conversation and opening the door to this neglected area of architectural theory. This thesis could encourage the arguments of other researchers with different points of view on this architecture's conceptual structure, stimulating the discourse of architectural theory.

2.3 THE CLIENT AND THE ARCHITECT

The architectural profession today sees the architect in a post-enlightenment role relative to his clients and builders. The architect envisions the concept for

23. Evidence that the word *anthropos* was used for men and women, like our word human, can be found in the Greek Septaguint, *'... καὶ ψυχαὶ ἀνθρώπων ἀπὸ τῶν γυναικῶν…'*, (Numbers 31:35 LXX), which uses *anthropos* for women alone. Also, numerous examples from ancient Greek texts are cited in Liddell, H.G. & Scott, R. (1940) *A Greek-English Lexicon,* Revised: Jones, H.S. & McKenzie, R. Oxford: Clarendon Press.

24. Through symbolic theology, Sophia was a concept which helped the 'lover of wisdom' to connect the divine virtues of Plotinus' 'All-Soul' with the emerging Christian theology of the Areopagitica. Sophia traced a respectable lineage to Pythagoras who called his practices philosophia or 'love of wisdom', since no human could be completely wise. Plotinus begins his first Ennead with *'the Soul using the body as an instrument' (1966, I:3, p. 99)* and goes on to analyse virtues, divine and human. See Plotinus (1966) *Plotinus, Porphyry on Plotinus: Ennead 1*, LOEB Translated by A.H. Armstrong. Cambridge MA; London: Harvard University Press. Dionysios the (pseudo) Areopagite develops on this subject within the emerging Christian theology, in his text 'On Divine Names' [Περί θείων Ονομάτων].

an architectural design. If the client likes it, he then pays the architect and other consultants to produce a set of design drawings; permissions are obtained, budgets and timelines set, and the architect's technical drawings define the building for the contractors to build it on behalf of the client. Some parts of this model may not be entirely irrelevant to the 8th century. For example our legal description of the architect as 'agent of the owner' representing his interests, is a vestige of medieval times. But from here the similarities being to diverge. The role of architect and general contractor would need to combine into one person to arrive at a description of the medieval architect as Master mason.[25] If this person were to then produce a set of technical instructions representing the clients' interests to issue to the builders while supervising them on-site, we may arrive at means of communication other than our kind of set of drawings. For the architect a significant difference with our time is the relationship with the client. The latter's power and drive in setting forth a political and religious vision through architecture should not be underestimated during the Christian transition to 'the Empire of the New Rome'. Nor should one underestimate the power of architecture to promote and make tangible such a vision to the citizen. In the 8th century, architecture was one of the contemporary mass media, and doubly so during iconoclasm. Therefore, texts which describe the church buildings to the public from the clients' point of view give us an insight into the 'conceptual church' which they were promoting in conformity with religious dogma, social order, tradition, and construction technology.[26]

Keeping the focus for now on the architect's relationship with the physical development of the domed church concept, it was enabled by the Late Roman and early Christian materials and techniques for building domes and vaults, which have been comprehensively documented by J. P. Adam, L. Lancaster, and P. Vitti. By the 4th century, there was a tradition in construction that, according to Ward-Perkins did not change radically into later centuries.[27] However, there were important changes documented by P. Sanpaolesi, N. Karydis, R. Mainstone, A. Moropoulou, H. Buchwald and others, who consider the evolution of

25. It was not until the time of Alberti in 15th century Italy, that the role of the architect began to change in the direction of what we now define as his role.

26. The ekphraseis from the 6th and 10th centuries, introduced in the last chapter, specifically describe the new domed churches in publicly performed works of rhetoric. Possibly memorised and sung like epic poems, they combine theology, poetry and architecture in action. This aspect of promoting a conceptual church will be taken up later in this chapter.

27. *'… the resemblance to Byzantine methods of building is far too close to be accidental. The vaults and the more fragmentary, but essentially similar, vaults of the Arch of Galerius are enough to show that, in its vaulting, as in the structure of its walls, the Salonica of Galerius anticipates much that is typical of the local architecture of succeeding centuries.'* (Ward-Perkins 1958, p. 90, In: The Great Palace of the Byzantine Emperors by David Talbot Rice (1903-1972).

the dome on the basilica in Byzantine design with the construction techniques.[28] The increase in new types of vaulting and the evolution of specific practices using Byzantine mortar, construction sequencing, formwork-saving centering, and effective systems of proportions developed to new levels during the centuries in which Christianity became established. These in turn were implemented in types of new designs.[29]

The official histories tell one side of the story, that late Roman and early Christian architects and military engineers implemented the formal town planning, infrastructure, and building designs which their Emperors promoted throughout the empire. By the 6th century, Procopius of Caesarea's panegyric of imperial building activity *De Aedificiis* of A.D. 550-560 depicts Justinian as the 'Great Builder ... personally involved in building and re-building projects all over the empire' (Zanini, 2007, p. 381) .[30] The imperial family and nobility, as the clients, commisioned architects to build not only private chapels and churches in Constantinople but dispatched them to build exemplary cathedrals, civic infrastructure, and much military infrastructure in cities that were strategically important to the empire. Court architects such as the designers of Hagia Sophia in Constantinople, Anthemius and Isidore, both from Asia Minor, were celebrated as the agents of the monarch.[31] However, Zanini, (2007, p. 389) writes that

> 'monumental building activity between the second half of the 5th and the end of the 6th centuries, in the capital as well as the provinces, suggests the existence of regional architectural schools and provincial technicans, as comptent as the great court architects. ... Early Byzantine sources report a relatively long list of "intermediate" architects who, although not Constantinoplitan geniuses, were not simple master-builders either.'

Their traditions in design and construction techniques interacted with the cen-

28. The works of Vitti and Lancaster document how, from the 2nd century AD, there were certain leaps in the adoption of vaulted and domed construction technology; the squinch vault, began to be implemented throughout the Roman empire under Trajan with his architect Apollodorus of Damascus. Vaulting was extensively used under his successor Hadrian, whose mausoleum the Pantheon received a massive dome. Under Constantine I the basilica was adopted for Christian congregational liturgies in Constantinople, Rome, Jerusalem and elsewhere, breaking with the former trabeated religious architecture. Justinian likewise had a large imperial construction program in which he rebuilt the Empire in a Christian image with domes and vaulting.

29. These will be explored in more depth in Chapter 5 of this thesis.

30. *'St. Sophia, perhaps more than any other known important building reflects "architectural design upon Imperial command"'* (Buchwald,1999, p. 41)

31. Zanini (2007, p. 385) writes that there were 'two basic assignments to the court architect: one of a conceptual nature; and one organisational'. And he quotes Cassiodorus' job description for Ravenna's court architect, *'When we are thinking of rebuilding a city or founding new forts ... we shall rely on you to bring our ideas to everybody's eyes. The mason, the marble-cutter, the brass-maker, the builder of vaults, the plasterer, and the mosaicist all will ask you about anything they are unsure of, and so, an army of artisans will come to you for orders, so as to avoid any mistake.'*

tral authority. Relying of epigraphic sources, Zanini tells us of 'the impressive reputation of 6th c. master-builders from Isauria,' (ibid. p. 285).[32] Also several notable 6th century mechanikoi: the Alexandrian *Crises*, 'in charge of most Syro-Mesopotamian buildings and fortifications'; *Isidore of Miletus* the younger, responsible for works in Zenobia-Halebiyye, and Chalcis in Syria, as well as Constantinople; the architect (possibly Theodore) 'sent by Justinian to Jerusalem to build the church of the Holy Virgin', and '*Asaph and Addai*, who are mentioned in a 6th c. Syriac Hymn devoted to the reconstruction of Hagia Sophia in Edessa, [who] must have been also architects linked to Justinian' (ibid. pp. 390-391).

The other side of the story is more diffuse and beyond the formal histories. In a traditional pre-modern society systems of communication and record-keeping between client and architect were very different to ours, yet there were well-organised pathways for the transmission of ideas, within which each person, within the chain of command, had some scope for thinking creatively and implementing their part.[33] As a Christian Empire, all things civic had to comply with the dogmas approved by the major theological councils and synods of bishops which were convened by the emperor. This theoretical basis for the empire's vision of development, from new towns to their shrines and cathedrals, was passed from the central imperial authority through intermediaries to the extents of the empire. It required high level approval and patronage, be it from the old order of Roman landowners or the new one of Christian bishops.[34]

The Imperial and aristocratic clients are credited for the public policy of the 6th century by Matthews (1995, II, p. 2). He suggests that the domed palace churches, intimately associated with emperors, were influential in promoting the central dome for the rebuilding of churches of the empire.[35] However, as

32. ibid. p. 285 *'the best evidence of continuity in architectural and building techniques is once again literary and epigraphic, including texts belonging to less "high-brow" genres, such as chronicles, hagiographical works and "private" epigraphy ... for example, 'the Vitae of Saint Simeon the Stylite, Saint Martha and Saint Nicholas of Sion recall the impressive reputation of 6th c. master-builders from Isauria.'*

33. See Ousterhout (1999, p. 48) for instances and variations in the chain of command for building projects in the Transitional period.

34. Zanini tells of the centralised planning and implementation of the construction of the fortress-city of Dara, on the border with the Persian empire; that the Bishop was entrusted with local project management, and that he had surveys done which were sent to the imperial court specialists to approve the choice of the site.

35. Imperial examples of churches with a central dome are: Constantine's Golden Octagon in Antioch, the Arian Emperor's San Lorenzo in Milan, Justinian's Ss. Sergius and Bacchus in Constantinople, and Charlemagne's Palatine chapel. Matthews looks carefully at the three palace churches of Constantinople, Justinian's church of Ss. Sergios and Bacchus at the Hormisdas palace, 'the church of Saint John the Baptist the at the Jucundianae Palace in Hebdomon', closely resembing San Vitale in Ravenna, and 'the principal palace church, St. Stephen in the Daphne Palace.' (Matthews, 1995, II, p. 2)

Buchwald (1999, p. 215) points out, the major design development in the domed church was 'the combination of the traditional aisled basilican church with a single dominant domed bay in the nave'.[36] In the technology transfers between provinces and capital, major churches rebuilt in a domed form during the 6th century were the *megale ekklisia* of Hagia Sophia, the church of the Holy Apostles, and Hagia Eirine, all in the capital Constantinople; St. John in Ephesus, in 'the capital of the Thracesian theme and a major religious centre' of growing importance (Karydis, 2019, p. 19); San Vitale in Ravenna, also an imperial capital; the 'Great Church' dedicated to 'Holy Wisdom' in Edessa, a pilgrimage city of Christian learning and of strategic importance. Three of these churches have *ekphraseis* composed of them to promote their conceptual aspects by their clients.[37]

As the Roman empire became more Christian, the patronage networks shifted from the 'ancient aristocracy of blood and commercial middle class to the new aristocracy of office (ecclesiastical, military, and beaurocratic leaders)' (Zanini, 2007, p. 384). Not every church project could be an imperial one especially in regional cities. From the 4th century onwards, the clients who provided the brief and the building funds for cathedrals, churches, and monasteries at the level of the city councils were increasingly the bishops, archbishops, and abbots. Mango (1998, pp. 35-36) tells us that 'from Constantine to Justinian decurions [urban aristocrats, "municipal gentry"] made increasing efforts to avoid their responsibilities ... They were collectively responsible for all municipal works, for the repair of public buildings, aqueducts and fortifications, for keeping streets and drains clean, for providing spectacles, over-seeing the market ...' - the list of duties was long. 'By the middle of the sixth century' Mango tells us, urban 'councils had become pretty much extinct' and at the provincial level it was the Bishops who filled the vacuum, 'dispensing justice, overseeing the market, regulating weights and measures, repairing bridges ...' and providing for the population charitably through the large endowments they were gaining from the faithful. It was fast becoming a theocratic society whose logic was theological and whose authority was Christ. It was administered by the ecclesiastical hierarchy with broad oversight by imperial edicts.

36. Buchwald (1999, p. 209) writes that in the 6th century two types of domed church can be found 'almost exclusively in western Asia Minor ... their spacial organisation depends primarily on a series of equal or almost equal modular units, usually each unit being composed of a vault supported by piers on a square or nearly square plan.', the domed basilica is 'even less frequent in other parts of the Byzantine empire, with the exception of Asia Minor.' He suggests (p. 211) possible 'missing links' tracing this conceptual church, citing St. Barnabas in Cyprus (possibly 5th century) and St. John of Ephesos / St. Polyeuktos in Constantinople.

37. According to Connor's 1999 article on Hagios Polyeuktos, built in the early 6th century by the aristocrat Juliana, its epigrams describe a conceptual prototype for the cathedral typos of Hagia Sophia, suggesting that the typos of the church was already formed in the highest intellectual circles of Byzantine society.

While the needs of the church included a building budget and liturgical functionality, it was not limited to them.[38] Mango's prolific research considers the invisible conceptual realities that lay behind the scenes in everyday life.[39]

> To the Byzantine man, as indeed to all *men of the Middle Ages*, the supernatural existed in a very real and familiar sense. ... Any account of the Byzantine 'world-view' must necessarily begin with the supernatural. (Mango 1998, p.151)[40]

He holds the view that 'the art of the Later Roman Empire adapted to the needs of the Church' (ibid, p. 258) to explain the aesthetic changes taking place at the start of the Transitional period,

> If the art of the fourth and fifth centuries may be viewed in terms of a degradation of classical style, such a standard is no longer adequate for judging the art of Justinian's epoch. At a date not far from 500 AD there occured an aesthetic change. We are not yet in a position to explain how or why it came about, but there are indications that the new style was introduced deliberately and in the highest circles of society. (ibid. 1998, p. 261)

Though Mango is not specific about the details, others have suggested that the discovery of the works of Dionysios the Areopagite (circa 500 AD) were an important factor in this change.[41] Buchwald (1999, p. 33) writes of the 'dematerialisation of the marble achieved with the undercutting' in the stereometric impost capitals that appear first in St. Polyeuktos and then in Hagia Sophia in Constantinople, 'The undercutting provides a double shelled, diaphanous appearance reminiscent of the relationship between the nave and the side aisles of the church.' An apophatic element comes into dialogue with the solid masonry materials, removing its dark mass to contrast light and shade.[42] Yet 'the major

38. *'Whatever its time and place of origin, however, the cross-domed church was splendidly adapted to the practical demands and the symbolism of the liturgy as they became firmly established during the centuries after Justinian. The architectural and the liturgical plan have been integrated to perfection.'* (Krautheimer, 1986, p. 297)

39. Mango acknowledges what Dionysios (1897) calls the *'one Providence of the whole, superessentially established above all the powers, unseen and seen,'* as a necessity for any account of the Byzantine world-view (HH IX: IV, p.173).

40. *'Not only did that other world continually impinge upon everyday life; it also constituted that higher and timeless reality to which earthly existence was but a brief prelude.'* (Mango 1998, p.151)

41. Grabar (2018) had already suggested in 1947 that the catalyst for the change in the time of Justinian was the Areopagitica of Dionysios the (pseudo) Areopagite. Curcic (2011) and (2012) also had this opinion and is discussed later in this chapter.

42. Buchwald (1999, pp. 46-47) summarises the changes represented by Hagia Sophia in Constantinople as: *'A. Extraordinary engineering skills as reflected in the dome and the entire support system ... B. Underlying conservatism ... the use of the traditional aisled basilica component ... C. Radical innovation ... the combination of an aisled basilica, the dome as the central feature of the nave ... D. An overriding sense of unity ... the stereometric geometry evident in all the components of the building, including the vaults, vertical surfaces, piers, column shafts, capitals and the details of their ionic volutes... Inherent contradictions .... the engineering system*

objective appears to have been to obtain unity in all components of the building by attuning the forms of the capitals to those inherent in the design of the whole church.' (ibid. p. 33). [43] This was a system unfolded from within that clearly relied on coherent design principles and architectural theory.

After considering the issue of patronage, Zanini's article goes on to explore how '... great construction projects financed by imperial benefaction were always accomplished by individuals...' (2007, p. 382).[44] Among Mango's *men of the Middle Ages* were the *mechanikos* (engineer), the *architekton* (architect), and the *oikodomon* (head builder) who mediated between the owners of the churches whose vision they built and the builders constructing with their traditional techniques.

2.4 EDUCATION OF THE ARCHITECT, THEORY AND PRACTICE

The *mechanikos* and *architekton* were the equivalent of our architect, as the client's representative, and belonging to a professional body.[45] However, these are not really translatable because, as Zanini, Downey, and Mamouloukos' articles explain, their role and way of working differed from ours. Downey (1946-48) considers the education of the *mechanikos* and *architekton* in *Byzantine Architects, their Training and Methods*.[46] Their curriculum included both theory (*τὸ μὲν λογικόν*) and practice (*τὸ δὲ χειρουργικόν*), according to a handbook on Greek geometry written c. 320 AD, by a certain Pappus of Alexandria.[47] His descrip-

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required to support the enormous dome and the appearance of weightlessness and lack of structural effort ...' which he believes were intentional on the part of the architects.

43. By this he is suggesting that the undercut forms of the capitals is attuned to the double-shelled, perforated 'lacy' masonry walls that compose the church as a series of 'earthen veils'. Buchwald (1999, p. 32) writes of the evolving domed basilican architecture, *'The discrepancy between the geometric forms of the architecture and the organic forms of the capitals was not fully resolved before the 6th century.'*

44. *'... great construction projects financed by imperial benefaction were always accomplished by individuals: workers, master-builders and architects with the ability to physically implement ideas, who applied their theoretical and technological knowledge to the complex task of converting raw building materials into public monuments'* (Zanini, 2007, p. 382).

45. Ousterhout (1999, p. 49) *'Artisans were organised into guilds (systemata, or somateia), which, in the tenth century, were privilieged corporations with volountary membership, and which were protected from the competition of non-guild members)'.*

46. Downey adds the oikodomos (builder) and technites (engineer), and to Zanini's list he adds that *'Rufinus of Antioch, who is called architekton, was sent to Gaza in 402 AD to build the church of Eudoxia'* and *'Apollodorua of Damascus who built a bridge across the Danube under Trajan, as "architekton of the whole work."'*

47. Downey quotes from the eighth book of Pappus' Synagoge (Συναγωγη):
'The mechanicians (μηχανικοί) of Heron's school say that mechanics can be divided into a theoretical and a manual part; the theoretical part (τὸ μὲν λογικόν) is composed of geometry, arithmetical, astronomy and physics, the manual (τὸ δὲ χειρουργικόν) [the hands-on] of work in metals, construction, carpentering, and the art of painting, and the practical execution of these matters.'

tion of *mechanike theoria* as 'dealing with the material nature of the universe' is not what a modern material scientist would expect.

> 'For it deals generally with the stability and movement of bodies about their centres of gravity, and their motions in space, inquiring not only into the causes of those that move in virtue of their nature, but forcibly transferring others from their own places in a motion contrary to their nature' (Downey, 1946-48, p. 106).

This reveals that the curriculum of the *mechanikos* in the 4th century included astronomy and philosophy, and would suggest that by the 6th-9th century the training of the architect would be keeping up with the latest in philosophy and theology.[48]

Downey writes that *architectus*, the title given by Trajan to Apollodorus, was the highest professional rank for the Romans of the 2nd century AD. But by the time of Procopius in the 6th century, the *mechanikos* was more valued as the specialist who understood the *mechanike theoria* that included geometry, vaultings and stereometry. By then, 'the ideal curriculum of what we would call architectural studies' (ibid. p. 107) described by Pappus had been established, but those who did not qualify as *mechanikos* could continue to be *architekton*, or *oikodomon*, or whatever title their trade gave them.[49] By the 6th century the *architekton* had acquired training in *mechanike theoria* and its hands-on methods in the arts of architecture, mosaics, painting and so on.[50]

The examples of the *mechanokoi* in epigraphy, given by Downey and Zanini, do not date much later than the 6th century, but it is likely that in the following centuries they continued to learn their profession as before, through both theory and practice. During the 6th -9th centuries, in the Transitional period, their job must have been exceptionally challenging; they were required to give practical form to their clients' vision of domed churches, suitable for liturgical use and compliant with the theology of the ecclesiastical synods, using affordable technologies in a time of reduced public funds, where timber was an expensive re-

48. Pappus description implies that the currriculum had absorbed Aristotle's *Physics* with its discussion of the 'unmoved movers'. If this is the case, the *mechanikos*, *architekton or oikodomon*, of the 7th - 8th century must have absorbed the theology of Dionysios the Areopagite who *'tells us that God is not solely an unmoved mover. He is also moved'* (Sanidopoulos, 2013)

49. Downey makes it clear that the curriculum was fully established in the time of Constantine the Great *'made plain by a decree of 344 A.D. concerning "mechanicos et geometras et architectos"'* ... Pappus' *'statement is based on the doctrine of Heron of Alexandria who was, among other things, an expert on stereometry and had written a treatise* ***On Vaultings****'* (Downey, 1946-48, p. 106).

50. Of Hagia Sophia, Constantinople's two *mechanikoi*, Isidorus wrote a commentary on Heron's treatise ***On Vaulting***, and gave a description of a special compass which he had invented for drawing parabolas. To Anthemius we owe an early description of the construction of an ellipse by means of a string stretched tight about two foci.

source, and to make them enduring in earthquakes, fires and floods, and stable in periods of public unrest.[51] In addition, there may not have been local builders capable of building these forms in provincial towns; they may have required highly paid Isaurian or Syrian specialists, who were much praised in epigraphies of the 6th century, while majority of the team would have been local.[52] It is in this period, according to Buchwald, that the innovative architects and Master masons developed the domed and cross-domed basilicas in cities like Ephesus, Sardis, Hierapolis, Philadelphia, Antalya, Ankara, Amorium, Myra, and Aspendus. He remarks that,

> 'The church of St. Sophia in Salonica seems to be an isolated example of the cross-domed basilica outside Asia Minor. Because of its late construction date in, the last quarter of the 8th century, it seems possible that its forms were designed under the inspiration of the earlier buildings using a similar plan in Asia Minor. Indeed, St. Sophia could have been built by a master mason, or even with the aid of work crews from Asia Minor, for little building activity on a monumental scale seems to have occured in northern Greece in the generations preceding its construction and expertise may well have been imported. (Buchwald, 1999, p. 222)[53]

If this is the case, the *architekton* and master-masons of Anatolia, having adapted the masonry tradition of orthogonal basilicas to embrace the stereometry of complex geometries and stereotomy of intersecting domes and vaults, then brought their product to Thessaloniki.[54] They would have needed to communicate the new design to their clients and to train local masons and apprentices.

The *architekton* would have needed to communicate the conceptual building to this team for construction. In the 10th century, Constantine of Rhodes de-

51. Though Gregory of Nyssa did not have ready accress to construction quality timber in the eroded hills of Cappadocia, and the wheat farming plains around Iconium, the locations of the Asia Minor transitional churches were not in landscapes where timber was scarce. Large quantities of timber (of lesser quality) was required for brick production factories, lime kilns, smelting metals and more. One can argue that perhaps the good quality timber was reserved for the ship building and warships that were in high demand.

52. Zanini (2005, p. 285)

53. To make sure that his point is understood, Buchwald (1999. p. 222) continues, *'While the construction of the church may be related to the imperial family, the evidence now avaialble indicates that precedents for its design are to be found in Asia Minor rather than in the capital. The suggestion that St. Sophia was constructed following a major Byzantine victory over the Slavs in 783 fits well into the pattern proposed above for the cross-domed basilicas of Asia minor.'*

54. The master-builders were probably sent by Imperial command in the case of Hagia Sophia in Thessaloniki. The Great Church in Constantinople must have always been a touchstone of the approved Imperial direction, but the work of implementing the domed space for public worship into the basilicas was made practical and scaleable and repeatable in Asia Minor. For Cormack's theory that Hagia Sophia Thessaloniki was built in 3-4 years to be viable, a sophisticated system of geometry and construction must have been well-developed and ready to go into fast production in the 8th century.

scribes how the 6th century '*mechanourgoi* and *geometrai'*, referring to Anthemius and Isidorus, designed and built the Church of the Holy Apostles in Constantinople. This implies that the methods he describes were traditional and established over the Transitional centuries.[55] What was changing in his time was the way that figurative iconography was replacing geometric designs in churches, and most of his *ekphrasis* is dedicated to this. It therefore contains clues that connect a) geometry, b) drawing a 3-dimensional figure using line, c) constructing architecture from a flat image, and d) figurative iconography.[56]

Downey discusses whether the Byzantine *architekton* had anything like our set of drawings in plan, section and elevation, or whether the means of communication was different. He suggests that Constantine's words (l. 498) 'σχῆμα καὶ προβλημα χ' ὕψωμα' may mean 'three ways of concieving and presenting a building' (1946-48, p. 116).[57] Regarding the Byzantine *architekton* inscribing the image of the building with lines he says that the word schema (σχῆμα) was established to mean 'ground plan', but he can find no evidence to connect Procopius' use of *schema* (σχῆμα) and *ektypoma* (εκτύπωμα), with Vitruvius' categories of *ichnographia* (plan), *orthographia* (elevation), and *scaenographia* (perspective or projection).[58] However, he finds the term *scaenographia* significant because it was used in Heron of Alexandria's manual on the geometry of vaultings as, 'The suitable method of drawing images (or "pictures") of buildings', leading him to conclude that 'Byzantine writers, in their descriptions of buildings, often view their subject matter in geometrical terms' (ibid. pp. 115-6).[59] Logically speaking, *scaenographia* could be understood as a system of stylised 2-dimensional drawing that contains the geometrical information for the mind to build up a 3-dimensional image of the object or space.

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55. This passage is preceded by a long description of the ancient constellations to distinguish them from *'a different new heaven ... a heaven furnished with other mightier stars'* which is depicted through the church structure, its geometry, and will be depicted in Christian iconography on its domes and vaults (Constantine, 2012. l. 502, p. 53)

56. Constantine's *ekphrasis* was written within the hundred years after the end of iconoclasm, at a time when large scale iconographic themes and standardised compositions were replacing old geometic ones on the domes and walls of existing churches. The first half of the poem describes the city of Constantinople and the church of the Holy Apostles, in a way that prepares the listener to appreciate the iconography in the second half.

57. *'Here, σχῆμα could, by itself, mean either a "plan" or a "form", and ὕψωμα may mean either "height" or elevation". Etymologically, πρόβλημα could well be employed to denote a projected (literally "thrown forward") view, and ὕψωμα would be an apt description of a view in elevation or in section.*' (Downey, 1946-48, p. 116)

58. Downey (1946-48, pp. 114-118). He writes that the word ektypoma (εκτύπωμα) in Procopius could mean anything from a drawing to a scale model.

59. *'Heron of Alexandria who was, among other things, an expert in stereometry and had written a treatise On Vaultings'* (ibid. p. 107). This was in the 1st century, but was referred to by Pappus in the 4th century as the authority for the theroetical part of the architect's education.



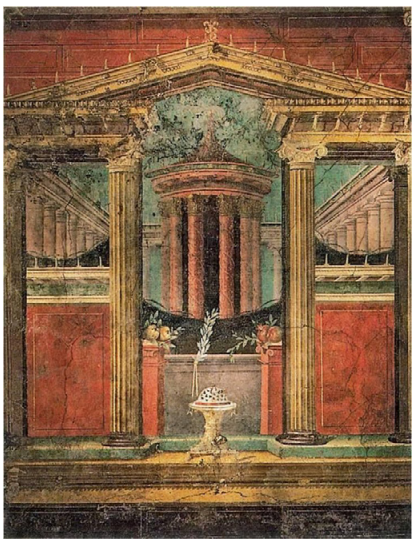


FIG. 14 Above: Cubiculum from the Villa of P. Fannius Synistor at Boscoreale, ca. 50-40 BC, Archaeological Museum, Rome. *Avaliable from: https://www.idesign.wiki/en/the-four-pompeian-styles/. [Accessed 12 Sept. 2022)*

FIG. 15 Above left: Interior mosaic (scaenographia) in the Rotonda of Galerius in Thessaloniki.
Photo by author.



FIG. 16 Below left: An image from a Vatican Codex Vat.gr.1162 (12th century) believed to be a representation of the Church of the Holy Apostles. There is a geometric design relationship between the scene of the Analipsis within the church and the design element shown in elevation. *Available from: https://en.wikipedia.org/wiki/Church_of_the_Holy_Apostles [Accessed 09 April, 2022)*

FIG. 17 Below: Mosaic of the Analipsis (12th century), in the Capella Palatina, Palermo. The same geometric design elements compose the scene as the image from the Vatican Codex left.
Photo by author.



The elusive Byzantine 'plan, section, and elevation' has yet to be found, but at least one can examine the images of buildings that do exist. Roman scaenographia was part of the Hellenistic tradition of painting that grew into the techniques of early Byzantine iconography, and reached their full development after iconoclasm ended in 843 AD.[60] The Romans painted buildings in their wall frescoes which can be seen in Pompeii and Herculaneum; in the mosaics of Thessaloniki's Rotonda (converted into the church of St. George) numerous images of building structures encircle the upper walls of the domed space; this tradition of Roman imagery was extended and modified to become one of the foundations of Christian iconography in which images of buildings also exist.

The technique is flattened and the buildings are seen from several angles at the same time (sometimes called 'reverse perspective'). Icons convey a dense amount of 3-dimensional information about the buildings portrayed with great economy of line, perhaps more so than a single 'realistic' perspective. To Leonid Ouspensky (1992, p. 191), the architectural rendering of Byzantine iconographers 'transcends the rationalistic logic of men and the laws of earthly life.'[61] Temple's view is that, 'this architecture has many curious and unreal qualities' which he calls a 'conscious distortion', such that architecture is indicating 'psychological and spiritual realities'. The system of architectural representation is not whimsical; he muses, 'yet they are painted with assurance and impressive mastery and, in the own surreal or supra-real way, they have great beauty.' We have entered a world where 'ordinary reality has been dismantled in order to recreate a context for higher truth.' (Temple, 2001, pp. 142-143)[62]

60. *'Heron's definition of τὸ σκηνογραφικόν occurs in a list of geometric forms'* (ibid. p. 117). Examples of Roman *scaenographia* can be seen in the remaining mosaics around the dome of the 3rd century Rotonda of Galerius. These are done in a style similar to those of the wall paintings of Pompeii and are clearly part of a wider tradition.

61. Ouspensky (1992, p. 191) writes, *'the architecture frequently defies all human logic, both in its forms and in its details. If real architectural forms are the starting point, proportion is absolutely neglected, the doors and windows are not in the proper place and, besides, or completely useless because of the dimensions, etc. … the true meaning of this phenomenon is that the action represented in the icon transcends the rationalistic logic of men and the laws of earthly life.'* And he continues on to quote the gospel, *"I will destroy the wisdom of the wise and the cleverest of the clever I will thwart"* (1 Cor. 1: 21).

62. Describing the architecture in icons, Temple writes that, *'The different features: columns, corridors, perspectives, colonnades, atrium, pediment, have only a token resemblance to the actual forms of classical architecture and their strange mergings and non-sequential relationships could not exist in "reality". And yet they are painted with assurance and impressive mastery and, in the own surreal or supra-real way, they have great beauty. We feel we are stepping into a world of pure enchantment.'* (Temple, 2001, p. 142) Referring to an icon of the annunciation, he explains how the buildings notate states of being, '*That these are psychological and spiritual realities is especially emphasised by the house of the Mother of God which is at the back of the icon. This building does not show us her house in the three-dimensional sense as a western painting world. It shows us something far more important than historical anecdote. The architecture in the icon is a commentary on the accessibility of the spiritual life and the necessary state without which divine influences cannot be received. We see simultaneously both the*

While it is true that the architecture in icons does appear to defy our logic and is symbolic for inner states analogous to what is being presented, the author would like to suggest a further interpretation; that the iconic method represents only the essential information. It employs an economy of line, rather like jotting down some reminder notes but not filling in the rest of the sentences.. To someone who knows what they refer to, the reminder notes are sufficient to reconstruct the full meaning. When combined with models and the geometric, 'constructive drawing' on the building site the icon could be seen to convey precise, qualitative, and to a certain extent quantitative, information about a building.

In Constantine of Rhodes's description of setting out the church building for construction, one is struck by the play between line and three dimensions, and the emphasis on number symbolism and geometrical layout. He writes that Anthemius or Isidore, 'marked out the linear form of a cube', after explaining to us that 'a cube is a four-sided outline with equal dimensions on all sides, whether in numbers or in lines' (In: James, 2012, l. 551-556, pp. 56-57), and he tells us that 'the craftsman' marked this form of a cube 'on the surface of the ground'.[63] It seems that the building is being marked out on the ground in 2-dimensions, mathematically, and within that action the essential 3-dimensional information was being communicated in lines 551-558. After this Constantine tells us how the craftsman, presumably continuing to mark out or stake out the building, added the porticoes, masonry piers, and the placement of the vaults and dome.[64] It seems that up to quite a developed point in the design the craftsman

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outside as well as the inside aspects of the house and, by the entry of the angel, we understand that divine power and energy reaches us when we open ourselves inwardly and withdraw from the distractions of the outer world.'(ibid. p. 143)

63. In architectural technical drawing a dimension is always both a number and a line.

64. Constantine's translator comments that, *'Reinach observed that the section of the poem from line 548 onwards is a deeply obscure piece of description and that Constantine's invocation to the Word has been of no benefit'*, a judgement which she considers *'a little harsh'* (James, 2012, p. 198). One must agree with James since, if one assumes that Constantine is describing the 'setting out' of the building on the ground, and carefully exmaines each of the original words he uses in Greek, one can sometimes find solutions to this obscurity. For example, in lines 558-565, *'γωνίας κατ' ἐμβόλους'* and *'γωνιῶν κατ' ἐμβόλους'* may not be referring to porticos, but to lines that make a pointed corner that thrusts into the circle that he has drawn (see Ch. 5, Fig.26, p.216 of this thesis). This would fit better with his imagery of *tagmata* and *phalanxes* drawn up around the *naos*, since *embolos* also had the meaning of 'wedge-shaped order of battle'. The doubling up of the piers in groups of four seems to indicate the type of massive 'perforated' pier that we see in Hagia Sophia, whose footprint on the ground is made of four smaller blocks (cf. Karydis, 2020, pp. 117-118, footnotes #74, 75). Also later, we see in lines 718-721 the number of the Apostles associated with 48 columns which indicates 4 colmuns per pier and per Apostle. The word 'embolos' perfectly indicates the 2-dimensional line connected with the 3-dimensional 'hollowing out' of the massive piers. Lines 580-581 could be taken to refer to the main apse joined to a 'broad' arch, or a subsidiary apse joined to a pendentive dome. The word *'σφενδόνας'* in line 624 has a meaning of a sling, including a sling that is part of a crane, a sling that is a bandage, a slingshot; has connotations not only of defensive

was setting out all these features of the future building on the ground, and the listener is being invited to imagine. His choice of words seem to 'toggle' between line and cube, between 2- and 3-dimensions, so that one is not sure if the craftsman is inscribing his lines on the ground or if they are etched up in the air with the vaults and domes.[65] The *ekphrasis* continues with a description of these elements with what seems to be a three dimensional projection of the design, 'he raised, he stretched out, he unfolded it ....he had unfolded in a circle'.[66] He gives us a three dimensional, geometic and numeric, description of the church and has us imagining the building from different angles all around through the drawing that the workman is making on the ground. It seems that his prayer to convey what James (2012, p. 55, l. 538) translates as the 'intricate designs of the church' (σχημάτων πολυτρόπων) might be more be literally understood as 'of designs of many ways' (multi-faceted, versatile/ manifold/ much-turned/ multi-method).[67] Perhaps this was a *schema* (σχῆμα) which conveyed 3-dimensional information, and even multiple symbolic meaning, through multiple facets and angles in 2-dimensions.

Is it possible that Constantine might be describing a method of representation for us that is connected not only to construction lines, but also to the lines of iconography? Byzantine iconography's lines and its flat planes of colours, are insistently 2-dimensional, yet the geometrically composed figures project forward into the space of the contemplator in vivid 3-dimensions, once certain parameters are known and the subject is familiar. For example, in architectural orthogonal projection, the numerical value of the side of a square indicates how tall the 3-dimensional cube will be, an arc drawn in plan indicates a vault, a double line notates a window, a dotted line indicates a structure above or below, and so on. Constantine may be referring to a method of embodying section and plan together in a flat line drawing in a way that throws the image forward into the imagination.

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war fitting Constantine's other imagery, but also of construction and of tensile forces. Thus it might mean (bounding) 'arches' as translated, but equally well it could mean pendentives. cf. Karydis (2020, p. 124, footnote #90).

65. This can be seen as a premable to his main purpose of explaining the role of iconography in the venerable church of the Holy Apostles.

66. Constantine's choice of verbs: *ἤγειρεν*, *ἐξέτεινεν*, *ἤπλωσε* (2012, l. 573, p. 59) must have resonated with his audience as verbs used in the Septaguint Bible for God's creation of the universe.

67. He uses the word *πολυτρόπος* twice, once in line 538 as *σχημάτων πολυτρόπων* for the multi-faceted design of the *naos*, and once in line 546 as *μηχανὰς πολυτρόπους* for the multi-faceted techniques (contrivance). The latter also had connotations of construction crane and the war machines. Overall Constantine's ekphraseis bring one the sense that architecture and iconography were seen as the defense of the church, which is herself seen as the bride of Christ.

Following this substantial description Constantine says, 'after he [the craftsman] fitted together the framework of the church', (πῆγμα τοὺ νεώ συναρμόσας) then 'he set up in four groups four foundations ...' (βάσεις τῶν πινσοπύργων), going on to describe the church building built with 'configurations from geometrical theories' in lines 589-634.[68] There could be several readings for 'framework' (πῆγμα). The scale model, characterised by Buchwald as 'one of the most important tools of architectural design', is cited by Mamaloukos (2018, p. 87), but since no scale models of Hagia Sophia have survived, it seems best to look for other technqiues that enabled the Byzantine *architekton* or Master mason to set up the building's conceptual framework of harmonic proportions and geometry.[69] Mamaloukos (2018, pp. 86-88) discusses a series of other ways in which the use of geometry and systems of proportions may have been implemented in construction.[70] For example, a conceptual model might be another church which is a protoype, or an object with the same system of proportions.[71] An invisible 'drawing' in the form of geometries, axes and dimensions could be connecting the geometric (Euclidian) 'framework' of the church. Mamaloukos names Hagia Sophia, Thessaloniki as one of a group of significant churches that he finds hard to believe were built without drawings. Similar to the methods of Western Europe's medieval masons, there may have been two levels of drawing, he suggests, one less accurate general view to convey the building concept to the client and the other precise drawings made for the builders. The latter might be drawings on the floors and walls as part of the process of construction, as well as templates for making elements of the building. These may have combined with significant surfaces and finishes - such as the finish floor level and the sculptural elements such as the cornices (*kosmites*),

68. Liddell and Scott (1940) gives further meanings to these key words: πῆγμα - anything fastened or joined together, framework; stage or scaffold; a metaphorical bond, fabric; anything congealed. συναρμόζω - in physical sense, fit together; put together, so as to make a whole; of combination in act or thought; metaph., adapt or conform one thing to another

69. See Mamaloukos, S. (2018) **'From Design to Construction: Aspects of Implementation in Byzantine Architecture'** *Deltion of the Christian Archaeological Society*, Series 4 Vol. 39, pp. 83-98, Athens: The Christian Archaeological Society

70. Mamloukos (2018, p. 86) writes that the protoype, from the aspect of 'typology', was an important basis for new buildings, and changes were made along the way. He gives an example of Hagia Eirene as a prototype that had far reaching effects.

71. On the use of a pre-existing church or churches a models, Buchwald (1999, p. 222) finds it *'possible that its forms were designed under the inspiration of the earlier buildngs using a similar plan in Asia Minor.'* Naturally this knowledge is vested in the Master mason himself thus, *'St. Sophia could have been built by a master-mason, or even with the aid of work crews from Asia Minor, for little building activity on a monumnetal scale seems to have occured in Northern Greece in the generations preceding its construction and expertise may very well have been imported. ... precedents for its design are to be found in Asia Minor rather than in the capital.'* For Buchwald's theories of geometric systems used from the column capitals to the whole building, to bring a sense of unity to the Great Church in Constantinople, see pp. 30-34. For his theories on the *Quadratura* and the use of geometry to generate the design see pp. 293-321.

column capitals, door frames, the templum, the ambo, and nested architectural elements - all of which acted as part of the 'drawing.'[72]

Before going deeper into the *theoria* of the Byzantine *architekton* I want to take a moment to consider conceptual building from the maker's view, that is, the art of making something hands-on. 'Making creates knowledge, builds environments, and transforms lives' introduces *Making,* a book by Tim Ingold (2013). 'Building is an activity, it is what builders do' but *a building* has become something static and theoretical (ibid. p. 47). He writes that 'the seventh century scholar Isidore of Seville had identified the architect as a mason (*masionem*), a word that he derived, in turn, from the Latin *machina' (*and this surely points again to the connection between the *mechanikos*, the *architekton*, and the mason). Ingold researches what it meant to learn to make something in a medieval society as yet unaffected by the modern seperation between theory and practice, free from 'the professionalism of architecture as a discipline devoted exclusively to design as opposed to implementation' (ibid. p. 49).[73] It is through making that one learns. An apprentice 'finds out' by *doing* so that 'knowing is a process of actively following, of going along' (ibid. p. 1). The working methods of a medieval workshop of masons show us how to be part of 'a dynamic centre of production' while maintaining the chain of transmission of the design vision all the way through to the tangible building;[74]

Their challenges were solved through a combination of rules of thumb and creative extem-

72. Mamaloukos (2018, pp. 92-93)

73. Questioning the cultural assumptions of his time just after 'the age of enlightement', Ernst Curtius (1814-1896) researched the meaning of the ancient Greek poetics as 'making' and 'producing' ; *'The Greek words for poetry and poet have a technological, not a metaphysical, still less a religious, significance. At the same time no people has had a stronger sense of the divine in poetry than the Greeks. But this divine element—precisely because it is divine—is something that exists without and above man, something which, as a muse, as a god, as a divine frenzy, bursts upon him and fills him. Poetry receives its metaphysical value not from the subjectivity of the poet but from a superhuman authority.' [...] 'Indeed there was no other word. The Greek εἶνποι means "to make" in the sense of "to produce," "to fabricate." Herodotus uses ποίημα (" a thing made") for goldwork, ποίησις ("making") for making wine. Plato defines the usage as follows: All production of things is poiesis. Producing poetry stands to the general domain of production as a part to the whole.'* (Ibid. p. 145) The Christian culture of the 8th century had inherited these meanings and connotations of *poesis*, while the theology of the Incarnation had brought the divine compassionately into the realm of the human and no longer considered God to be 'without and above man' as Curtius writes.

74. *'Hugh of Saint Victor ... in his Didascalion of 1127 describing the Mason at work: "Take a look at what the mason does. When the foundation has been laid he stretches out his string in a straight line., He drops his perpendicular, and then one by one he lays the diligently polished stones in a row. Then he asks for other stones and still others, and if by chance he finds some that do not fit with the fixed course he has laid, he takes his file, smooths off the protruding parts, files down the rough spots, and the places that do not fit, reduces to form, and so at last joins them to the rest of the stones set into the row." (Hugh of Saint Victor 1961:140)'* (Ingold, 2013, pp. 54-55).

> porisation, leaving ample scope for individual differences and the play of personal choice. ... Although the constructive geometry of the masons laid down carefully prescribed steps that apprentices were taught to follow, none was so constraining as to actually preordain the course of action, nor were the rules they observed any substitute for the skill and inventiveness, born of long experience, on which the success of their enterprise finally depended. ... The masons' rules were maxims in this sense: they comprised the resources for action , but did not determine it.' (Ingold, 2013, p. 54)[75]

The way of working with apprentices involved drawing with lines but these lines were intensely physical, drawn with ropes and 'there was no radical division here between drawing and building' (ibid. p. 56). Their method of drawing was the 'geometric projection of a conceptual image' but it was a,

> '... geometry informed by a tactile and sensuous knowledge of line' (ibid. pp. 50-51). In fact, 'their geometry was not just practical but more precisely, constructive. Their straight lines were not the notional point-to-point connectors of Euclid, but actual lengths of chord pegged out on site and at full scale. The points were nails or stakes, hammered into wood or ground. And the figures of the geometry were not empty outlines but solid weighty pieces with tangible surfaces and edges, cut and shaped from wood or stone.' (ibid. p. 54)

The image of the Byzantine church building was conveyed by the *architekton* to his team with this 'tactile and sensuous knowledge of the line'. Downey, Zanini, Ousterhout, and Ingold, citing sources ranging from Late Roman to the European Middle Ages, attest that that Master mason or *architekton*, would have known not only masonry construction and carpentry, but may also have been a mosaic artist and painter. Having been educated in both *theoria* and *praktike*, he would have been well able to communicate with his team of builders and artists in the methods of construction that Lancaster, Vitti, and Karydis, and others describe in development from the late Roman to the end of the Transitional period.[76]

If the architect's curriculum in the 8th century was even a shadow of that of the 6th century, he would be competent in the *theoria* of his time. His clients, the archbishops, bishops, and abbots of monasteries had developed an understanding of *theoria*, not unrelated to the former notions of bodies 'that move in space ... in virtue of their nature', the moved and unmoved movers, but nevertheless distinctly Christian; a theoria centred around the incarnate God and the event

75. One can compare this with the 'tones' of Byzantine music which laid out the structure in which the musician can play as a creative individual. This way of thinking is ubiquitous in traditional arts on every continent.

76. In future chapters, purely for the purpose of brevity, I shall use the title *architekton* and master-mason interchangeably, in a general sense, to also designate *mechanikos* or *oikodomos*, since we do not know the exact qualification of the person in charge of building Hagia Sophia, Thessaloniki.

of the transfiguration.[77] Protopresbyter John Romanides points to the late 5th-6th century Dionysios the Areopagite as a key figure during the re-definition of *theoria* by Christian theology. Despite being,

> '... accused of Platonizing and Neoplatonizing he [Dionysios] clearly tells us that God is not solely an unmoved mover. He is also moved. There is in God an aspect that is capable of suffering or undergoing change ... even though he used their language.' (Romanides, 2003, pp. 71-73).

The *architekton* of the transitional period would have learned the construction language of former centuries but with a Christian *theoria*, one closely linked to the Incarnation of Christ. The scriptures taught that human is created from earth, the masons' building material, and that God had condescended to become human in Christ.

2.5 THEORIA - IMAGE AND LIKENESS, THEOLOGY OF LIGHT

The orthodox Christian *theoria* of the masons' ecclesiastical clients, was defined as much by Euclid's geometry, as by the transfiguration of Christ. Veniamin (2014, p. 138) discusses 'the truth of both Scripture and Tradition, which are themselves based on theoria (θεωρία) - the vision of Christ in glory'.[78] Christian theoria is defined by the event of the Transfiguration of Christ when he ascended Mount Tabor with three of his disciples. When they entered the cloud with him, they saw him shining with a light that was so bright that they could not bear it and they fell to the ground in prostration (see Fig. 18).[79] According to St. John Chrysostom whose words are explained by Veniamin, the nature of the Taboric light on which the disciples attempted to gaze was the 'uncreated' light of God.[80] Though God in essence is invisible and ineffable, He can be percieved in His energies. Through the incarnation of Christ, and in an act of condescension (συγκατάβασις) on the mountain, God's 'uncreated light' was shown in a way that could be visible to the disciples' eyes. At that time 'he disclosed only

77. Romanides (2003, pp. 71-73) discusses the change in theoria relative to the entities that move in space in virtue of their nature and Aristotle's 'unmoved mover' that moves others by attraction. The *'presence of entelechy, the self-actualising fulfillment of a thing's distinctive nature, is what drives motion to completion.'* Aristotle's unmoved mover was adopted into Platonism by the neo-Platonists.

78. See Veniamin, C. (2014) *The Orthodox Understanding of Salvation: "Theosis" in scripture and tradition.* Dalton: Mount Thabor Publishing

79. *Theoria* (theory*)* is etymologically related to seeing, to the verb θεωρῶ. Strong's dictionary: θεωρέω, θεωρῶ - to be a spectator, look at, behold, to look at, gaze, behold; discern, gaze on for the purpose of analyzing (discriminating), to perceive with the eyes, to discern, to ascertain, find out, by seeing. The biblical reference, John 12:45, reads: *'And he who sees Me sees Him who sent Me.*' (New King James Version); *καὶ ὁ θεωρῶν ἐμὲ θεωρεῖ τὸν πέμψαντά με* (Septaguint)

80. St. Gregory Palamas calls this 'uncreated light' God' 'energies'.



FIG. 18 Above: Mosaic of the Transfiguration Capella Palatina, 11th century, Palazzo dei Normanni, Palermo, Sicily, (by Byzantine craftsmen).
Photo by author.

as much of His brightness as they were able to endure' (ibid. p. 93). Veniamin (2014, p. 96) makes the point that God, in His condescension, 'appears not as He is, but as that which the beholder is able to see. '[81] To illustrate he quotes St. John Chrysostom that,

> The glory of incorruptible bodies does not emit a light similar to that of this corruptible body, nor is it of a kind which is accessible to mortal eyes, but incorruptible and immortal eyes are required in order to see it. (ibid. p. 92)

The Transfiguration of Christ is a reminder that our vision is not enough; there is a light that is far brighter than what we can see with our 'mortal eyes' and it is that light that we must seek to see, with 'immortal eyes'.[82] The limitation is our mode of seeing, our person.

> For "God surpasses every power and operation of the intellect", says St. Maximos, and man's participation in divine glory leaves "no impression whatever on the intellect of the one attempting to comprehend."' (ibid. p. 117)

The mortal person must put on immortality: 'For this corruptible must put on incorruption, and this mortal must put on immortality' (1 Corinthians 15, KJV).[83] 'The body is directly involved in the vision of God' writes Father Kallistos Ware (1997, p. 108). He explains the *theoria* of the Transfiguration through the words of St. Gregory Palamas (Triads, I, iii, 37), Hagia Sophia's archbishop during the 13th century,[84]

> '"The flesh also is transformed," he writes, "It is raised on high together with the soul and

81. Veniamin (2014, p.96) *'God in Himself, in His essence and nature, is invisible (ἀόρατος) and incomprehensible (ἀπερινόητος), and as such can neither be seen (ὀφθῆναι μὴ δυνάμενος) nor comprehended (νικῶν λογισμόν, ὑπερβαίνων διάνοιαν). But if this is so, how does God reveal Himself to man? In the same passage, Chrysostom provides us with the following answer: "When He wishes to show Himself, He does not appear as He is, nor is His bare essence revealed–for no one has seen God as He is. For at His condescension even the cherubim trembled: He condescended, and the mountains smoked; He condescended and the sea dried up; He condescended, and Heaven was shaken; for had He not condescended, who could have borne it? Therefore, He appears not as He is, but as that which the beholder is able to see. That is why He sometimes appears aged, and sometimes young, sometimes in fire, and sometimes in a breeze, sometimes in water, and sometimes in weapons, not changing His essence, but fashioning His appearance according to the different circumstances (σχηματίζων τὴν ὄψιν πρὸς τὴν ποικολίαν τῶν ὑποκειμένων)." (In: Eutropium Eunuchum II 9 (PG 52:403)'*

82. This is perhaps what Dionysios means when he writes seeing the glories of surpassing beauty with the eyeless minds.

83. *'St. Gregory Palamas gave us an incisive and fundamental formula for all of Orthodoxy: "God is called light not according to his essence but according to his energy."'* [Against Akindynos, PG. 150, 893] (Evdokimov, 2011, Loc. 4744 of 6421)

84. Because Hellenic philosophy divided body and soul as seperate categories, but the Hebrew religion saw a whole person *'body and soul together'*, therefore the Christian apologists, using the Greek language but attempting to live and convey the message of Jesus, had to find ways to affirm the body and soul as one Person, and convey the idea that the body is not *'extrinsic to personhood'* (Ware, 1997, p. 92).

together with the soul it enjoys communion with God becoming his domain and dwelling place."' (ibid. p. 107). [85]

Therefore *theoria* contains not only a person's present limitation but also the direction towards the fullness of God's glory, which is why it must be coupled with *mystagogia*. Veniamin sees St. Maximos as 'above all ascetic and therefore refreshingly practical' in his *scholia* on the Transfiguration, because he is concerned with 'the process by which the vision of Christ transfigured may be attained' (ibid. p. 115).[86] With possible effects on the practical part of the architect or mason's education, 'Maximos sees '"diligence in virtue" as a pre-requisite for the vision of Christ transfigured [which] corresponds to the practical stage (πρακτική)' (ibid. p. 120). Trying to 'see' without 'doing' the disciple (or apprentice) cannot simply transcend the eyes of the 'mortal eyes' with his incomplete personality, and 'put on immortality' to see with the eyes of the soul's 'immortal' person. To leave his limited vision he must undertake a mystagogy of doing (*ascesis*) under a spiritual master. At the same time the message of *theoria* given by Christ shows him the right path.[87] The light of the Transfiguration demonstrates that the light that cannot be seen with mortal eyes is on a continuum with the light that can be seen by mortal eyes, which science would call the energy spectrum. He could see 'in this life' and 'with his own eyes', but he must learn a different mode of seeing. He must put off his 'mortal' self, and acquire the divine qualities (virtues, names) of immortal Personhood.

Dionysios links theory and practice with the apophatic and kataphatic mo-

85. Ware (1997, p. 107) explains that *'at the second coming the righteous will likewise gaze on Christ's eternal glory through the physical eyes of their resurrection body'*. He continues on to quote Palamas that, *"If in the age to come', says Palamas, "the body will share with the soul in ineffable blessings, it must certainly share in them, as far as possible, here and now." (The Tome of the Holy Mountain, 6.)'* (ibid. p. 108)

86. (ibid. p. 118) *'He [Maximos] explains that ... the three disciples "passed from the flesh to the spirit" (ἀπὸ τῆς σαρκὸς εἰς τὸ πνεῦμα μετέβησαν), that is to say, they were transported from the plane of the physical and human to that of the spiritual and the divine. Such a vision, however presupposes a preparatory phase, one in which spiritual labour (ἄσκησις)) is required. Maximos says that the disciples were made worthy of seeing the Transfiguration "because of their diligence in virtue" (δι'ἀρετῆς ἐπιμέλειαν), and that they underwent a cleansing or purification of the spiritual and bodily senses (τῇ ἐναλλαγῇ τῶν κατ' αἴσθησιν ἐνεργειῶν), through the action of the Holy Spirit (ἣν αὐτούς τὸ πνεῦμα ἐνήργησε). The action of the Holy Spirit, then, effected a change in the operation of their senses - not a natural but a supernatural change, in which the "veils of the passions were removed from their noetic power".'*

87. Since the apostles beheld the 'uncreated light' of the Godhead through their bodily eyes, if there were a masons' mystagogy, we must assume that the mason must cultivate his bodily eyes, his 'immortal eyes', but in the 'here and now'. All these point to the heart as the unitary centre of perception, surpassing, though encompassing, the 'mortal eyes' of the human face. In the same article, Ware write of St. Macarius (p. 100-101) *'For Macarius the heart is thus the point of convergence and interaction within the human person as a whole. It is the means whereby grace permeates our body, and at the same time it is the centre in which the intellect resides.'*

tion of his Mystagogia, like the two hands of one body meeting at the heart.[88]

> Besides, we must also consider this, that the teachings, handed down by the Theologians is two-fold [dual] - [on the] one [hand] secret [spoken away] and mystical [initiatory] - [on] the other [hand], open [apparent] and better known [more knowable] - [on the] one [hand] symbolical and intitiative [mystic]- [on] the other [hand] philosophic and demonstrative; - and the unspoken is intertwined with the spoken. (Dionysios 1897, p. 113)

With these principles, he masterfully expounds on the liturgical action in *Ecclesiastical Hierarchy*, and on language itself in the *Divine Names*. Maximos follows with his own *Mystagogia*, as liturgical commentary.

Returning for a moment to the *architekton* or Master mason of the 8th century we can now get a better idea of the *theoria* and *praktiki* of his education. The traditional education of the *architekton*, the *mechanikos*, required that he become versatile (πολύτροπος) in geometry, astronomy, mechanics, stereometry, vaultings, masonry, carpentry, metallurgy, painting, as these were both theoretical and practical arts. Yet this Christian *theoria* would require that all these are directed towards divine illumination through an apprenticeship to a Master (*architekton* or Master mason). Just as the icon painter directs his visual art to what lies beyond 'mortal' vision, the *architekton* must put his geometry and mechanics and vaultings at the service of what lies beyond their physical dimension in the realm of St. John Chrysostom's 'uncreated light', or St. Gregory Palamas' 'divine energies'.

2.6 TRANSLATING BETWEEN ICON AND ARCHITECTURE

It is with this *theoria* of light that the pioneering work of archaeologist Slobodan Ćurčić (1940-2017) explored the relationship between the representational techniques of iconography, and Byzantine architecture.[89] As an archaeologist with a scientific training, he was able to present a religious Byzantine epistemology to the public in contemporary scientific language.[90] While his examination of arti-

88. Dionysios sums up this motion in his Epistle number IX, using the classical Greek sentence structure of, 'on the one hand' (μὲν) and 'on the other hand' (δὲ). *' Ἄλλως τε καὶ τούτο ἐννοῆσαι χρή, τὸ διττὴν είναι τὴν τῶν θεολόγων παράδοσιν, τὴν μὲν ἀπόρρητον καὶ μυστικήν, τὴν δε ἐμφανή καὶ γνωριμοτέραν, καὶ τὴν μὲν συμβολικὴν καὶ τελεστικήν, τὴν δὲ φιλόσοφον καὶ ἀποδεικτικήν. καὶ συμπέπλεκται τῷ ῥητῷ τὸ ἄρρητον.'* (Dionysios, Epistula IX, 1105D)

89. From 1986, Richard Krautheimer handed on the revision and new editions of Early Christian and Byzantine Architecture to archaeologist Slobodan Ćurčić (1940-2017) whom he rightly recognised as an important collaborator and pioneer in research. Ćurčić starts from the position that, *'Aesthetics in Byzantine art is a subject that was barely broached in Western historiography before the 1980s'* (2010, p. 3).

90. For decades he was Byzantine studies' leading light at Princeton University and Dumbarton Oaks. Being from a Serbian Orthodox Christian family gave him a personal access to its religion, rituals, and theology. Sadly, Ćurčić passed away in 2017. His pioneering new academic

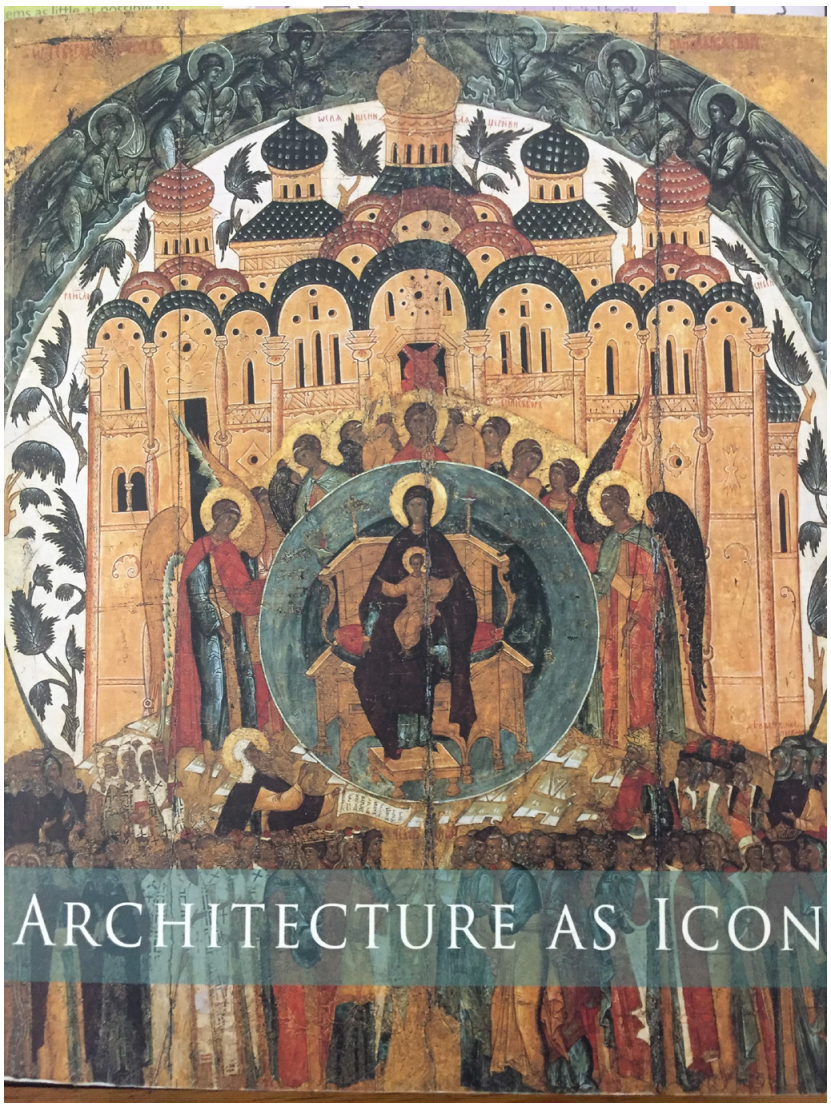


FIG. 19 Above: Book cover of the exhibition 'Architecture as Icon' by Slobodan Ćurčić and Evangelia Hadjitryphonos (2010) eds. Architecture as Icon: Perception and representation of architecture in Byzantine art. Princeton NJ: Princeton University Art Museum.

Photo by author



FIG. 20 Below left: Presentation of the Virgin at the Temple, wall fresco in the church of Panaghia Asinou, Cyprus. Note: In the centre of the 'chora', the depiction of the temple (naos) or ciborion. Four columns surmounted by arches carry a hexagonal conical 'dome'. The walls to either side terminate at the eaves with a 'radiant frieze' which is also at the feet of the persons, reminiscent of the waters above and below the cosmos.

Available from: http://www.soniahalliday.com/images/CY9-3-07.jpg [Accessed: 22 May, 2019]

facts or buildings is meticulously physical, the work focuses on the iconic image of this physical dimension in the realm of the imagination and ideas. Instead of a purely materialistic appraisal of Byzantine artifacts, including architecture, his radical contribution relates the divine light ('uncreated energies') with visible light as its symbol, and then with materialised light in architecture. He writes,

> The Byzantine aesthetic canon is intimately based on the Byzantine understanding of the universe. Early Christian and Byzantine art, deeply rooted in Neoplatonic philosophy, gradually rejected the realism of the Graeco-Roman pagan variety as a pictorial standard. The Byzantine theory of picture (εἰκῶν) and symbol sought to embody common spiritual values. Thus one might say, Byzantine art aimed at portraying the invisible (spiritual) by relying on the visible (visual) means. This apparent paradox is at the root of the differences between Western and Byzantine perceptions of art. (Ćurčić and Hadjitryphonos 2010, p. 7)

He observes the influence of theology on the major aesthetic changes which took place around the 6th century,

> ... their final synthesis probably took place about AD 500 in the work of an unknown author remembered only by his pseudonym, Dionysios the Areopagite. Of marginal significance in central theological debates of his time, Pseudo-Dionysios made major contributions through his sharpening of principles that eventually become the backbone of Byzantine aesthetics. (Curcic and Hadjitryphonos 2010, p.7)

By focussing on the images of buildings found in icons, he remarks that meaning might emanate from the architecture through its image, as a symbol. Curcic reminds us that 'according to (pseudo) Dionysios the preeminent role of any symbol is its power to reveal and conceal simultaneously'.[91]

By studying the image of architecture as it is presented in icons, Ćurčić and his students open a huge but coherent vista of meaning that was missed by previous researchers. Byzantine buildings could represent spiritual ideas through their conceptual image (see Figs. 19 and 20). Images of buildings become protagonists in icons, and infuse small scale reliquaires with symbolism, as well as floating through poetic texts of the time such as eulogies *(ekphraseis)* and hymns. This opens the door for describing the buildings via Byzantine philosophy and theology,

approach is exemplified in his articles and essays and in particular in his book of the exhibition, Architecture as Icon: Perception and Representation of Architecture in Byzantine Art, with Evangelia Hadjitryphonos, and his students Kathleen E. McVey and Helen G. Saradi.

91. *'For him, the symbol (σύμβολον) was the broadest philosophical-religious category, the overarching concept that included the meaning of picture, sign, representation, and beauty, but also of the human body and its parts, (at times signifying spiritual or divine powers), aromas, liturgical functions, and, above all, the eucharist. Thus, according to Pseudo-Dionysios the preeminent role of any symbol is its power to reveal and conceal simultaneously.'* (Curcic and Hadjitryphonos 2010, p.7)



FIG. 21 Above Left: Mosaic of rainbow mandorla encircling the centre of the Rotonda dome, late Roman Thessaloniki.

Available from: https://i.pinimg.com/564x/34/28/14/3428141425a924a48ac15a475fc82af8--thessaloniki-ancient-greece.jpg [Accessed: 11 February, 2021]



FIG. 22 Below Left: The iconoclastic cross mosaic with radiant polychrome cuboid mandorla, Hagia Sophia, Thessaloniki, Interior. Gold energy beams radiate from a hidden point behind it, at the centre 'beyond all', and manifest in a circular rainbow halo.

Photo by author.

FIG. 23 Below: Brickwork as 'radiant frieze', Hagia Sophia, Thessaloniki, Exterior.

Photo by author.



> ... art was never an end in itself, but a facilitator of access to the spiritual world, the indescribable, non-containable universe of the divine spirit. Picture, as visible object, was necessitated only by limited human capacities of spiritual seeing. Thus in the world of Eastern Christianity, the icon was (and still is) a means for spiritually crossing the divide beween the earthly and the heavenly domain. (Ćurčić and Hadjitryphonos 2010, p. 7)

Ćurčić's ground-breaking work propels architecture's image into the theological meditations contained within the icons. His approach indicates the merit of comparing two disciplines, the icon and building, from which 'emerges the realisation that a church building, not unlike an icon, was percieved simultaneously in material as well as symbolic terms.' (Ćurčić and Hadjitryphonos 2010, p.9)[92] If this simultaneous perception were the case then one can posit the Byzantine architect's *'skene'* as also conveying symbolism and architectural design from multiple viewpoints simultaneously.

In continuation, Curcic researched the representation of light itself,

> Light, according to him [Dionysios] - and like all other symbols - has both visible and invisible aspects. It, too, exists on the borders of the earthly (physical) and the divine (spritual) spheres. (Curcic 2010, p. 9)

In his essay entitled, 'Divine Light: Constructing the immaterial in Byzantine Art and Architecture' (2012), he makes a bold reference from the symbolic two dimensional representation in icons back to the three dimensional materiality of architecture, showing how the Byzantine *theoria* (theory) was integrated into the *praktiki* (practice) of the masons.[93] He observed the multicolored offset cubes which depict the shimmering edges of the mandorlas and rainbows in icons, like giant pixels (see Figs. 21, 22, 23).[94] This same pattern of offset cubes occurs in bands of brickwork on the exteriors of Byzantine churches. Curcic interprets the visual rendering of divine light in icons as having a counterpart in architecture in the brick zones between the 'lifts' of stone for which he coined

92. *'Our most extensive and clearest ideas about the meaning of the role of architecture in the Eastern Christian world are based on church buildings. This is not only true because churches constitute by far the best preserved body of Byzantine architectural heritage, but also because the surviving textual evidence is likewise devoted to matters pertaining to ecclesiastical buildings. From this emerges the realisation that a church building, not unlike an icon, was percieved simultaneously in material as well as symbolic terms.'* (Ćurčić and Hadjitryphonos 2010, p.9)

93. See Ćurčić, S. (2012) **'Divine Light: Constructing the immaterial in Byzantine art and architecture'**. In: Wescoat, B. and Ousterhout, R. eds. *Architecture of the Sacred: Space, Ritual, and Experience from Classical Greece to Byzantium*. Cambridge: Cambridge University Press.

94. See Ćurčić, S. (2012) Divine Light: Constructing the immaterial in Byzantine art and architecture. In: Wescoat, B. and Ousterhout, R. eds. Architecture of the Sacred: Space, Ritual, and Experience from Classical Greece to Byzantium. Cambridge: Cambridge University Press.

the neologism 'radiant frieze' or 'radiant band'.[95] Giving examples of sunbursts around arched openings, of cornices and horizontal strata on church facades he compares them with images in icons and psalters. To him, this evidences '... how Byzantine painters and builders employed common symbolic language [...] to denote the notion of Divine Light in physical terms.' (Ćurčić 2012, p. 308). One might call this a visible and invisible light crystallised into architecture.

In Hagia Sophia, Thessaloniki a shimmering, rainbow mandorla of cubic pixels is most clearly visible around the large iconoclastic cross mosaic. Its counterpart at the top of the exterior walls are simple horizontal rows of offset bricks that are 'radiant bands', crystallising on multiple levels as cornices, like 'radiant horizons'.[96]

Having made his point that Byzantine art seems to negate the physical realm, he concludes by remarking that the visual symbolism of divine light becomes strangely three dimensional in Byzantine architectural aesthetics, thereby posing the question about the material symbol,

> Whether executed in paint, in brick and mortar, or some other material, the rendition of this symbol depended on the medium in which it was executed, but its ultimate visual effect, regardless of the medium, was invariably three-dimensional. The exact implications of this observation do not have a ready answer, though its appearance in the context of an artistic tradition that generally tended to play down the significance of three-dimensionality is striking. (Curcic, 2012, p. 334)

Ćurčić's open question regarding the three dimensional aspects of Byzantine art and the method he pioneered, have given direction to this research. If representations of architecture are meaningful, active components of compositions in the painted world of icons, Ćurčić's work invites us to step back out of the painting into the tangible world. How the meanings within icons may have been rendered in the world experienced with all the senses, is explored throughout this thesis, but especially in Chapter 5 in which the architecture composed of such symbols forms the vessel to contain a devotional lifespace.[97]

95. These are the same layers of bricks that were given purely structural and material function by earlier historians who had given them the meaningless name 'dog-tooth frieze' in the 19th century.

96. We might extend this concept in Hagia Sophia's interior to the *cosmitis* on the iconostasis, to the main cornice (*cosmitis*) that divides the cubic height of the *naos* into two equal heights, and to the two secondary ones higher up.

97. Ćurčić has not been the only one to address the question of Byzantine aesthetic effects which convey the immaterial within matter. On the one hand, techniques such as rejecting shadows and reversing perspective, or showing differently timed events simultaneously, adopting a filigree undercut aesthetic for stone column capitals, or the shining gold 'heavens' in which iconic figures were depicted, feature in some of Cyril Mango's and Hans Buchwald's work. On the other hand, Otto Demus links the two-dimensional interior iconography and the architectural

Further to Ćurčić's work, in *Landscape, Nature, and the Sacred in Byzantium*, Veronica Della Dora (2016, p. 82) considers the nature of a *topos*, [98]

> Topos ... is an image that keeps recurring over and over again across space and time, regardless of the originality and contact. ... Topoi enable us to memorize concepts and make sense of the world. (ibid. pp. 1-2)

She argues that the Byzantines focused less on the image and more on its origin in prototype and archetype, whereby her writings become relevant to architecture.

> The Byzantine Basilica was itself a three-dimensional memory theatre, a cosmological symbol that simultaneously incarnated and sanctified the totality of the world, or, in the words of Dionysios, 'an (earthly) image of a heavenly hierarchy.'[99]

If one were able to read of the church as a spatial mnemonic, analogies with the spatial aspects of Dionysios' theology as a symbolic topology, could be found.

Helen Saradi's study of *Space in Byzantine Thought* also considers the conceptual iconic landscape, in which cities, natural landscape, and churches were situated.[100]

> In contemporary [Byzantine] literature ... cities were placed firmly in the world of the imagination. At the same time, rhetorical descriptions invited listeners to translate the forms of architectural beauty into abstract images. (Saradi, 2010, p. 76)

To validate her observations from icons, mosaics, and manuscript illustrations, she turns to texts of the Byzantine and ancient period.[101] In the last pages of her article, having brought the reader to an understanding of the Byzantine space of the city and landscape, she remarks that the church buildings had 'a sense of sublimated matter'.

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features of a church as composing one synthetic image with hierarchic topographic conventions.

98. See Glossary for *topos* and prototype. The theory of image and prototype was finally clarified during the iconoclastic controversy by John of Damascus and Theodore the Studite, whose primary texts inform this thesis in Chapter 4.

99. The interior of the basilica summarized the order of creation, of which the places portrayed in the mosaics were part. (Della Dora, 2016, p. 82)

100. Ćurčić 's collaborator in Architecture as Icon, Helen Saradi, has done comprehensive work in addressing the city, the landscape, and the church, as they relate to the iconic image and the texts of the time. Ćurčić, S. and Hadjitryphonos, E. eds. (2010) *Architecture as icon: perception and representation of architecture in Byzantine art*. Princeton, NJ: Princeton University Art Museum.

101. Of the works relevant to this thesis we find Biblical texts, Plato's Phaedo and Timaeus, Dionysios the (Pseudo) Areopagite, Patriarch Germanos, Maximos the Confessor, Symeon of Thessaloniki, Cosmas Indicopleustes, Procopius' De Aedificiis, Eusebios of Caesarea, and the Syraic Sougitha.

> It is an image of the world where the functions of the mind and the senses allow the earthly and visible to touch the heavenly and invisible. Such an aspect of space is absent from descriptions of pagan temples. [...] The Byzantines thenceforth interpreted the space of the church as an image of God, a replica of the universe and a symbol of the invisible divine space (Saradi, 2010, pp. 100 - 101)

In the sense that Saradi starts from the image, then moves to primary texts and to the physical objects, she shares much with Jelena Bogdanonvic's research on the Ciborion.[102] From the visual ciborion in icons, Bogdanovic researches the origin of the word, its place in religious texts, and how it manifests in religious reliquaries. [103]

> It seems plausible to recognize the pervasive and evocative presence of Dionysian concepts—including those of order, symbolism and apophaticism—in architecture and monumental decoration, even though direct influence of Dionysian thought on specific accomplishments most often remains unconfirmable and inconclusive. ... It seems that only within orthopraxy, which goes beyond literal adherence to texts and includes religious, liturgical and creative practices (patterns of ritualized behavior and familiarity with design processes, building techniques and experiences) the Dionysian legacy in medieval architecture can be more fully understood. (Bogdanovic, 2011, p. 133)

Thus she indicates that it would be necessary to connect the conceptual image of the church, with its tangible masonry architecture through 'orthopraxy', that is, 'doing the right thing'.[104] Curcic, Saradi, Della Dora, and Bogdanovic all share the technique of translation between image, word, and physical artifact.

2.7 CONCEPTUAL DESIGN TRANSLATED INTO WORDS

At about the time that one sees the masonry dome established on the basilican churches, there was an outpouring of literary expression from the Christian community. A synthesis was happening between the devotional work of the monastic fathers who dedicated themselves to living the theology, and those who focussed on expressing it in architecture. The conceptual topos of what became the cross-domed core in a basilica, as a set of definitive features, formed the symbolic topology of the conceptual church of the 6th century *ekphraseis*.

102. See Glossary for Ciborion.

103. Before the publication of her research on the Ciborion in 2017, Boganovic wrote a 2011 article about *Rethinking the Dionysian Legacy in Medieval Architecture*, in which she references many of the primary texts that inform this thesis. She connects Byzantine architecture with Dionysios in principle, through an erudite series of cross references, but only does not propose a method for researching 'orthopraxy' for the masons.

104. One could understand 'orthopraxy' to mean 'right actions' according to St. Maximos or the monks of the Philokalia or, according to the Mastermason it might mean the right methods of building the cathedral; this would depend on your profession and role in society.

The literary genres of *ekphrasis* (commonly translated as eulogy) are like literary icons.[105] They are not an immature form of mimesis.[106] These primary texts are very important to this thesis, giving academic gravitas to the idea that Byzantine churches such as Hagia Sophia projected a conceptual *topos*, a symbolic landscape, derived from both the building and theology.[107]

The surviving texts in Greek and one in Aramaic from the 6th century, and one from the 10th, describe church buildings as mnemonic pathways (mystical), dwellings of God. The Greek *ekphraseis* continued the ancient rhetorical technique whereby the speaker associated a series of symbolic objects with a series of known places, in a familiar building, for example, or on a frequently walked path through the city, as his mental 'notes'. Later, during his public speech or song, the speaker simply took a walk in his mind's eye though the familiar territory, where the previously placed symbols reminded him to deliver his narrative in proper sequence.[108] The texts are either in eulogy form (*ekphrasis*) or hymns (*soughitha, kontakion*).

Procopios of Caesarea's inauguration *ekphrasis* of 557 AD, for Hagia Sophia in Constantinople, reads superficially as a description with some anecdotal stories, but a close examination shows it includes symbolic cosmological themes

105. *Ekphrasis* is a form of Greek hymn called a kontakion, and its Syriac counterpart is called sougitha. *Ekphrasis* is a translation of one medium of expression or art into another, for example from visual arts into words. See Glossary for *ekphrasis*.

106. Like the visual icon which early commentators considered to be an immature form of mimesis, the ekphraseis have been considered obscure, disjointed, or filled with exaggerated flowery language. Historian of art, Robin Cormack states the problem while discussing contemporary difficulties in relating to icons, *'We have already seen the limitations of the Byzantine ekphrasis, which offers a literary counterpart to the visual experience, but not necessarily linked to the object described.'* (Cormack 1997, p. 111) Avoiding assumptions, historian Cyril Mango simply collected several 6th century ekphraseis together in one volume: the Sougitha, those to Hagia Sophia in Constantinople, and its kontakion. He lets the texts speak for themselves without interpreting their relationship with the masonry architecture.

107. Palmer does important investigative work establishing the Sougitha's place in the history of Edessa, and Rodley presents possible building plans inferred from the text. However, Palmer does not attempt to relate the symbolism of the hymn to the building designs that Rodley infers from the text, and when this relationship happens almost organically from their collaboration, he seems too embarrased to go deeply into the subject, giving us only one paragraph, *"'Water-channels" were built "in the Old Church of Edessa" which suggests that the circumfluent ocean may have had something artificial about it. Presumably the original purpose of these channels was to guard against flooding; but when Justinian's diversion of the river made such precautions unnecessary, the architects may have incorporated decorative conduits as part of a conscious mimesis of the created world, anticipating the happy conceit of the poet. It is perhaps not fanciful to see the "crags" (Procopius uses of the same image in Buildings 1.1.38) and the marble (cf. Procopius, ibid. 1.1.30); the sunlight and the rain; the lead, the stone and the wood (although this last is only mentioned to deny its presence in the dome) as impressionistic colouring, intended subtly to evoke the earth and its atmosphere.'* (Palmer 1988, p. 134)

108. Cf. Yates, F. (1999) ***The Art of Memory***. London: New York : Routledge

found in all the eulogies.[109] Six years later, inaugurating the partial re-building and repairs done after earthquake damage, Paul the Silentiary recited his *ekphrasis*, composed around similar concepts with a literary flourish, and Homeric epithets.[110] The same symbolic and mystic concepts also give structure to the anonymous semi-legendary account called *The Narratio de S. Sophia,* which recounts the masons' interaction with the building.[111] And the same symbolic topology is described in the concise and vivid text of the *Sougitha*, a Syriac hymn in Aramaic.[112]

The *Sougitha* hymns God as the creator of all things manifesting in the church. It describes the cathedral at Urha (Edessa) from top to bottom in a logical series stanzas, numbered by the twenty-two letters of the Aramaic alphabet.[113] It is characterised by McVey, K. (1983, p. 91) as 'the earliest extant document which associates the central dome (and other architectural features) of a Christian church with cosmology and mystical theology'. Grabar sees it as 'Syriac in language only but Greek in spirit', and calls it the 'first literary evidence' of works which popularised the 'dome of heavens' among Christians.[114]

109. Procopius' work *On Buildings* (Gr: Περὶ Κτισμάτων, Lat: De Aedificatoris) is a panegyric on Justinian's public works projects throughout the empire, written sometime during the 550s. Book I: i describes Hagia Sophia. I have quoted from Procopius (1954) *Procopius of Caesarea: Buildings* LOEB Translated by H.B. Dewing and G. Downey. London: William Heinemann Ltd.

110. The eulogy of Paul the Silentiary, a poem of 1026 hexameters, was recited early in 563 AD soon after the second consecration of the church on December 24, 562. See Paul Silentiarius, () Mango, C. (1972) *The art of the Byzantine Empire, 312-1453: sources and documents*; and Bell, P.N. ed. (2009) *Three political voices from the age of Justinian*; and Macrides, R. and Magdalino, P. (1988) *The architecture of ekphrasis: construction and context of Paul the Silentiary's poem on Hagia Sophia*.

111. *The Narratio de S. Sophia*, is translated and extensively quoted (verse 7ff.Inc.) in Mango, C. (1972) *The art of the Byzantine Empire, 312-1453: sources and documents*. New Jersey: Prentice Hall

112. The *Sougitha* was composed for the dedication of the re-built Hagia Sophia in Edessa completed ca. 543-554 AD, according to McVey (1983 p. 91) The 'temple' it describes was the Cathedral in Urha, which was Edessa's Aramaic name. Academic scholarship, including Mango, McVey, and Macrides, identifies it as the Hagia Sophia cathedral re-built under Justinian. See Appendix to this thesis for Mango and McVey's translation. Since there is little to nothing remaining of the Byzantine city, Wilson (1999, p.4) has sought contemporary references to Hagia Sophia in his book on Edessa, *'Whatever we may think of the Constantinopolitan Hagia Sophia, in the 9th century the Arab Ibn Khadadhbey reported the Byzantines to regard its Edessan namesake as the most beautiful stone building that had ever been constructed, and to give us some idea of its size, in the next century it was hailed as the largest building in the entire Moslem empire. According to another Arab, Al-Muqadasi, the Edessa Cathedral's mosaic-covered vaults made it one of the three wonders of the world.'*

113. Aramaic, the language spoken by Jesus, has an alphabet almost identical to Hebrew. The superimposition of the Hebrew letters onto the human body in their mystical tradition of Kabala is surely not a coincidence, but is probably indicative of a shared ancestry to the system of knowledge.

114. McVey, K. (1983) The Domed Church as Microcosm: Literary Roots of an Architectural Symbol. Dumbarton Oaks Papers [Online], 37 (1), pp. 91-121

All the 6th century eulogies were written within decades of each other.[115] They promoted the conceptual domed basilican church with the imperial support of Justinian and Theodora. As works that were sung or declaimed in public, they crafted a visual image of a conceptual church in the imagination of the listener, translating it into language. Through them the listener could take a virtual tour around the church, while associating symbolic imagery and concepts, so that even those who were not present at the ceremony could repeat the *ekphrasis* and traverse the *topos* and *chora* in their imagination.[116] Just as an icon lives within the beholder as an inner landscape, so these *ekphraseis* help the listener to consciously connect their experience of the tangible church with an analogous and more archetypal spiritual landscape.

The 6th century *ekphraseis* represent an important stage in the development of Christian symbolism. 'The symbolical expression of a [spiritually percieved] authentic and concrete reality', as Ouspensky (1992, p. 175) wrote, is highly developed and codified in icons. But it was not a developed visual language in this way in the 6th century; it was drawing upon the Greco-Roman tradition of symbolic imagery, that we see for example in the art of Pompeii and in the Rotonda. In the 6th century, the iconoclastic debate had not yet happened to select and codify the former imagery to conform to Christian theology. The *ekphraseis* represent a stage where a symbolic language, representing theological principles and indicating a very real but spiritually percieved world, was expressed in words. Being expressed in words, the *ekphraseis* took the language of symbols out of the visual realm and translated them into the realm of language. The alphabet, as I have shown, was fundamental to the Christian symbol of the XΩPA (*chora*), the Chi-Ro surrounded by the alpha and omega, representing all the letters of the alphabet. One can argue that the sense of sight, which had become oppressively dominant and misleading by late Rome, was rehabilitated to the sense of sound and to all the senses, because the *ekphraseis* were describing a multi-sensory work of architecture.[117] So the *ekphraseis* are an important stage in the development of Christian and Orthodox iconography because in them the symbol is more fluid, and it is allowed to pass from the visual language into the spoken language and into the space of an imagined building. From this imagined building, it could pass into the language of architecture, with an architectural theory that referred to the evolving Christian theology, and a repertoire of

115. Some precedent exists in Choricius of Gaza's eulogy to the church at Gaza. Choricius, of Gaza (Greek: Χορίκιος), was a Hellenic sophist and rhetorician, who flourished in the time of Emperor Anastasius I (AD 491–518), earlier than the other better known Greek eulogies.

116. See Glossary for *topos*. Also Chapter 5 of this thesis pp. 158-159.

117. See the abstract and Introduction to this thesis regarding architecture as an immersive medium.

symbols that became the definitive features of the Transitional churches. Centuries later, after the iconoclastic debate was resolved, we then see these symbols manifested again in the language of icons, 'to teach us about the spiritual realm' (Ouspensky, 1992, p. 174). Constantine of Rhodes' 10th century *ekphrasis*, is important because it connects the language of architecture, with the language of symbols expressed in words, and also with the newly approved codified language of iconography. References to the 6th century *ekphraseis* allow this thesis to connect the symbolic language of architecture to that spiritually percieved world, and to theology.

The Taboric *theoria,* developed by the patristic theologians, was also developed in the architectural *ekphraseis* to the conceptual church in the 6th century. McVey[118] believes that the Sougitha 'as an architectural θεωρία [theoria], resembles the mystagogical commentaries on the liturgy' and that,

> [the] 'difference between the architectural θεωρία of the hymn and the liturgical θεωρία of the commentaries is that the hymn contemplates an object-the church building-while the commentaries contemplate an action-the public worship.' (McVey, 1983, p. 110)

It describes this *theoria* of light in architectural terms. The windows of the building are, for example, the apostles bringing light.[119] 'Even in this present life the bodies of the saints sometimes shines outwardly with the same divine light that shone from Christ on Tabor' writes Ware (2007, p. 108). It also expresses the symbolic theology of the Trinity as one light entering the sanctuary through three windows. The relationship between Euclid's geometry and the Taboric *theoria* can be found in the masons' building material of 'earth' (his stone, bricks and mortar as the materials of the mountain) and the Incarnation of the divine human in 'earth'. The same 'immortal eyes' that see the divine human as the 'uncreated light' also see the earth (of the mountain) as the gold of divine light.[120]

118. *'The Hymn as an architectural θεωρία [theoria], resembles the mystagogical commentaries on the liturgy in one respect but differs in another. Like the liturgical commentaries, the hymn derives from the tradition of θεωρία as it had developed throughout the Patristic period, especially since Origen, as a manner of biblical interpretation. Both the hymn and the commentaries take this tradition of contemplation from its Scriptural context and apply it to an object or action. The object or action is then understood to be a means of ascent to God. The fundamental difference between the architectural θεωρία of the hymn and the liturgical θεωρία of the commentaries is that the hymn contemplates an object-the church building-while the commentaries contemplate an action-the public worship of the Christian community. The two remain closely related since the place of the action (the building) and the instruments of the action (clergy, vestments, altar, ambo, vessels) are closely related to the actions themselves.'* (McVey, 1983, p. 110)

119. These were the same disciples who prostrated on seeing the 'uncreated light' of Christ on Mount Tabor, and who later became the apostles and saints after they had completed their own journey to acquire 'immortal eyes' with the 'acquisition of the Holy Spirit', and become immortal Persons as guiding lights for humanity.

120. Bogdanovic (2020, p. 206), in 'Architecture as Icon', writes, *'By introducing the incarna-*

2.8 *THEORIA* INCORPORATED INTO THE *ARCHITEKTON* AND MASTER-MASON'S *PRAKTIKE*

Let us continue Curcic's reasoning about how this *theoria* relates to the *praktike* of masonry building and how it might be built into the church's masonry architecture. If Christ 'seen with mortal eyes' is a human figure who is God incarnate formed of 'earth', and 'seen with immortal eyes' is God's 'uncreated energies,' a very brilliant kind of light; and if the ekklisia is both the community of people and the temple composed of living stones, the 'empsychos naos'; then the church's masonry building too must communicate itself as a structure built from earth and at the same time from God's energies, the 'uncreated light'. In the language of the time, the heavenly church was built into the earthly one, the eternal church built into the temporal one.[121]

The methods, as far as we know from scholars such as Mango, Demus, Curcic, and Buchwald, and from direct observation, involved a tendency towards de-materialisation which manifested in the 6th century as the new aesthetic in Byzantine art and architecture. Examples are the undercut technique of the marble sculptors that creates the filigree, fret work quality of the column capitals and decorative friezes. In brickwork it creates the 'radiant frieze' quality noted by Curcic. These scholars connect the new aesthetic to the apophatic theology of Dionysios. If we approach the church design with the same apophatic method of subtracting material and emphasising solid and void, light and shade, we realise we cannot remove the mass of load-bearing masonry without creating structural problems. It becomes necessary to first conceptualise the building as a mountain, for example, or a solid element, that withdraws from itself to make space. Isar describes this 'movement contained in the Greek word *chora*' as having the sense of 'withdrawing, while inscribing the space in its withdrawal.' (2004, p. 60).[122] By this method of subtracting the conceptual mass the architect would be able to build a sacred space that reveals a tangible analogy of the *chora tou achorytou* (the space of that for which space cannot be made).

Thus in Hagia Sophia the mountain has withdrawn, hollowing out the

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tional argument, these theologians [Belting, Elsner, and Barber] not only enriched the Dionysian legacy of archetype as simultaneously God and the image of God with the church as its derivative "type," but also emphasized the importance of the human body in the creation of sacred architecture.'

121. *'... and he revealed this renowned house as another heaven-formed dwelling on earth, with Christ depicted as the sun.'* (Constantine of Rhodes, 2012, p. 69)

122. *'But there is a sense of movement contained in the Greek word chôra, which is linked to the verb chôréô having two senses: first, it means to withdraw (give way), to make room for another, like in the Homeric Hymns: "The earth gave way from beneath (gaîa d'enerthe chórês-en)". The sense is of withdrawing, while inscribing the space in its withdrawal.'* (Isar, 2004, p.60)

FIG. 24 Below: The undercut forms of Hagia Sophia's column capitals has the same aesthetic as the four massive 'perforated' piers, of heavy dense 'earth' (the stone of the mountain) shining with light. The column capitals are attuned to the overall building as a double shell with light filtering in from the outer shell to inner one through perforated, 'lacy' layers of screen walls and arches that compose the church as a series of 'earthen veils'.

All photos by author.





FIG. 25 Above Right: Exterior light filtering through Hagia Sophia's double layers of masonry walling, through arched openings and gallery screen walls, as if wrapping the naos is a lacy veil.

Below FIG. 26. Light filtering through the north aisle and gallery. Note the two massive 'perforated' piers and the light, lacy effect of the walls.



apses to reveal the space of the mysterium and the altar; the four broad arches have withdrawn, bowing, to reveal the space of the naos between them, their fingers still entwined.[123] The columnar screens and tympana built with small arches become like a perforated, lacy wall, veiling but not seperating. The light would have filtered dramatically through this wall before the upper level galleries were roofed over. The same can be said for the lower level aisles and the narthex; the light entering through outer windows and the doors then filters through the screen wall of columns and arches through to the core of the naos (see Figs. 24, 25, 26).[124] The four massive piers around the naos are also perforated by small arches allowing the passage of human beings through them.[125]

At some point, even though he started with a conceptual massiveness like a mountain, the master-mason reaches the limit of how much withdrawing, hollowing out, and removing structural mass he can do in a load-bearing masonry building.[126] One must ask what other methods might he have used to communicate the very real but spiritually percieved world'? How would he communicate divine energies or 'uncreated light' with his tangible materials? As mentioned in my introduction, the direction of Dionysios' mystagogia is ultimately apophatic, but the method is anagogic and kataphatic at the same time. I suggest that the architect or Master mason's tools were analogy and symbolism; referring to the source by 'anafora' (that offering up called *emulatio*, or likeness, by Foucault), and the chain of causality (Foucault's *convenientia*) that descends into the deep and ascends to the highest heavens.

It is this method of analogy and symbolism that we find in the *ekphraseis*. Thus when they describe Creation as descending from the highest to the lowest, or that earth is suspended from the heavens, they refer to the hanging chain of causality.[127] The entire structure of the Sougitha follows this pattern of verti-

123. Constantine of Rhodes (In: James, 2012, l. 619, p. 61) uses the image of 'entwining fingers with fingers' for the formation of the large vaults.

124. It would not have been possible to perforate the outer load bearing wall much more, because it is the structural wall for the barrel vaults, sail vaults and pendentive dome forming the floor of the galleries over the side aisles and narthex. This wall had to be thick, with buttressing piers in places, to resist overturning in a seismic event; the width to height ratio determines the overturning effect when a structure is subjected to lateral loads from wind, water surcharge, or seismic forces.

125. The apse of the prothesis 'signifies Bethlehem and the cave.' (Marinis 2014, p. 32) The imagery of the cave where the mountain has withdrawn is clear in iconography, and has been carried forward from neo-Platonic symbolism, now providing a topology for the Incarnation.

126. Of course, here we are talking about technique that is available to the uneducated people, one related to the pictorial culture. Those educated in philosophy and theology would conceptualise the entire earthly sensory realm opening to reveal the chora of God's energies where God creates both bodies and space simultaneously.

127. A hierarchic principle permeated the Byzantine aesthetic in arts and architecture, as Buchwald (1999) explains, for example, in his essay on *Saint Sophia, Turning Point in the Develop-*

cal hierachy, starting from the 'essence' and descending the building via the divine 'dispensation' (Dionysios' 'Divine Ray') which crystallises into parts of the building descending to reach the foundations; the church is divinely built from the top down. The *ekphraseis* of Procopius and Paul the Silentiary are more consciously discursive and encircling.[128] The theological themes are more integrated with a naturalistic description of the building, as is that of Constantine of Rhodes in the 10th century.[129] However, the same distinctive features of the Transitional church enumerated earlier in this chapter occur in all of them:

We see that, according to ancient tradition the columns are symbols for people. The floor is a symbol for the sea. The broad arches are symbols for rainbows, for the moment that the 'uncreated' energies crystallise as visible light. The plane registered by the cosmitis between the cube of the naos and the hemisphere of the dome, referes to the firmament. The spherical dome symbolises heaven. It is seen as a helmet fitted onto a divine head. The cubic naos is the earthly plane within which is the cave. The four towering piers are the craggy peaks of mountains, and within their perforated form small arches make spaces for real humans to appear in this life size three-dimensional icon. The upper galleries represent the realms where enlightened people exist, who in icons are depicted walking on top of the mountains or sitting in upper rooms, or simply living above the level of the earth. The marble symbolises the landscapes and communities of the *oikoumene*, the *acheiropoeiton* image of Christ, of an incarnate divine humanity in the earth. The light coming through the building, especially the encircling windows above around the dome, during the passage of the sun over the course of the day represents the distribution of the divine energies, the 'divine dispensation'. These distinctive features of a conceptual church which can be discerned in the *ekphraseis*, and in the symbolic landscapes of iconography, were constructed into the body of the architecture using analogy. Through them the architect achieves what the icon painter achieves; a material image that is an 'unlike likeness' for the immaterial divine light.

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ment of Byzaninte Architecture? But not only in arts and architetcure, the hierarchic principle also dominated the Imperial social structure.

128. Isar (2004, p. 66) makes frequent reference to their use of the encircling figure stylistically: *'Likewise, the columns in the exaedras "do not stand in a straight line" — insists Procopius — "but they retreat inward in the pattern of the semicircle (hêmikyklon) as if they were yielding to one another in a choral dance (en chorô allêlois hupex- istámenoi)"*. She also describes the ways that, *'Paulus the Silentiary's poem dedicated to Hagia Sophia is an exemplary text for the study of sacred space in Byzantium, and to illustrate my thesis that circular movement generates sacred space. In the poem, the architectural forms emerge as if created by a "point in motion" choros in Paul the Silentiary's ekphrasis.'* (ibid. pp. 69-70) Constantine of Rhodes' translator, James (2012, 196) also notes the *'sense of periegesis'* of his predecessors and that, *'Constantine adapted this model of progression but also continually disrupted it.'*

129. The theological themes were thereby more hidden from the 'uninitiated' (ἀμυήτοι as Dionysios calls them).

Finally, the earth itself provides the architect with the most powerful connection between the Byzantine *theoria* and the *praktike* of masonry architecture. The colourful and variegated book-matched marble revetments, that line the walls of the churches from before the 6th century until after the end of iconoclasm, represented all of the earths and the lands of the *oikoumene*. By representing their lands, they represented also the peoples who sent this tribute of their different marbles (*hyle,* material) from the different parts of the world.[130] The earth itself was seen as the material of the human body, since God had formed the human being from the dust of the earth.[131] The marble in *ekphrasis* is compared to the image made without hands (*acheiropoeiton*).[132] It is an earth that is the same light of creation as the Taboric light. From within the marble it shines 'brighter than the light of the sun', according to Procopius; this marble itself represented the divinized human body, the body filled with the Taboric light, God's energies.[133]

Here the mason can learn about this Taboric light in *theoria* and connect with it in *praktike*. Those energies that are within his building materials - the marble, the stones, the earth, the bricks, and the mortar - will be experienced by him. At first he experiences and learns without 'seeing' their energies but by encountering their weight and their density, and through their many qualities as aspects of divinity, much as the divine names explained by Dionysios were aspects of divinity. He will at first encounter them as an apprentice, and then he will work with them further, and finally he will submit to them, he will accept them, he will love them, and he will merge to become one with them.[134] This is where he may become one with those uncreated energies while his whole person transforms along the journey. Eventually he is building in a state of *anenergesia* (doing while not doing) and he can rightly say that the product of his hands is *acheiropoieton*. The *praktike* of his masonry methods exemplifies *Sophia* as a skill-based wisdom that comes from doing from a craft or an art such as architecture, carpentry, stone and brick masonry, sculpture, mosaic, painting, and gives guidance to Holy Wisdom (Hagia Sophia). All the crafts in the practial training

130. 'Let someone enumerate for me the cities that pride themselves on the sumptuousness of the marble [they bring forth]: Proconnesus they say takes joy in this respect...' (In: Mango, 1972, v. 41, p. 63). Most significant here is Mango's footnote; the word that he translates as 'marble' is, in fact, 'material' *(hyle, ὕλη*).

131. Genesis 2:7

132. Sougitha (In: Mango, 1972, p. 58)

133. *'You might say that the [interior] space is not illuminated by the sun from the outside, but that the radiance is generated from within'* Procopius writes in his *ekphrasis* (In: Mango, 1972, p. 74), and also that, *'the refulgence from the marble prevails, vying as it does with that of the gold [dome]'* (ibid. p. 76)

134. See Chapter 3 (Section 3.9, pp. 206-212), and Chapter 5 (Sections 5.7.9, pp. 379-389 and 5.8, pp. 389-391)

of Master mason or *architekton* are hands-on ways of learning to see in harmony with the sensory material world, in harmony with our eyes but learning to see with 'immortal eyes'. Thus the builder's method must be done though the principle of work 'made without hands' (*acheiropoeiton*) in order to fit into the logical philosophic foundations of Byzantine theology.

2.9 DIONYSIOS' UNLIKE IMAGE (*anomia symbola*)

In this chapter there have been three main points of contact between the theology of the 6th-9th century and the construction work of the *architekton* or Master mason. Firstly, his relationship with his ecclesiastical clients required an understanding of liturgy and its theology. Secondly, his education combined a *theoria* shaped by theology, with a practical training in the visual arts, like painting, mosaic, and sculpture, concurrently with construction.[135] Thirdly his daily life was lived in an orthodox Christian theocracy, as a member of a church and community, replete with the beliefs, the imagery and imagination of his times.

By situating Hagia Sophia in her theological context of Dionysios the (pseudo) Areopagite and Maximos the Confessor, one can find symbols, hierarchies, and geometric figures which link the liturgy, iconography, and masonry architecture by translation.[136] These essentially make an 'unlike image of Christ'. In her theological context, Hagia Sophia's architecture becomes a coherent mnemonic, as convenient as a rosary, as potent as a mantra or hymn, and as precise as any revelation. It is this approach to Byzantine architecture, validated by the *ekphraseis* of the 6th and 10th century AD, that will be pursued in the next chapters of this thesis.

Hagia Sophia's architectural mnemonic was integrated with the ecclesial and litugical experience of the community. It was not only static and theoretical, but it was lived. It set out the terms of a mystagogy, open to any person who sincerely entered its *chora* (space), to work under guidance, with divine blessing, to arrive at union with God (*henosis* or *theosis*). The 'unlike image' invites different media into its composition, allowing architecture to include the intangibles of human emotion, movement of air, sunlight and shadow, time duration, and human action.[137] The church's 'unlike image', like the *analipsis* in the dome,

135. Even during iconoclasm he was still required to produce geometric designs for churches, while secular art flourished. After the return of iconography in the 9th century, the profound concordance of iconography and architecture century suggests that they were never completely seperated, but were subdued in secret locations; for example, the monasteries were places of continuity and education.

136. Dionysios' term is 'anomia symbola'.

137. cf. Pentcheva, B. (2017) 'Vital Inbreathing', In: Icons and Liturgy, East and West, ed. Denysenko, N. Notre Dame: University of Notre Dame Press. Pentcheva writes of the early use of

indicates a path on which to move, reminiscent of Jesus' words, 'I am the way, the truth, and the life: no man cometh unto the Father, but by me,' (John 14:6, KJV).

Translating between the cognitive figures of analogy (*theoria)* and the actions of method (*mystagogia)* the following six essential themes emerge:

1) the ladder on which are 'the angels of God ascending and descending', also known as the 'divine ray', the 'doctrine of degrees', or the 'great chain of being', which was constructed as levels in the masonry church and related to the stages of mystagogy; [138]

2) the *anafora* which is a 'referring-up' or remembrance, an offering; the relationship between the centre and perimeter, notated in three dimensions by the ideogram of the *chi-ro* in a circle, which was built into the geometry of the masonry church and the method of the masons;

3) the *chora* as sacred space, in which this *chi-ro* ideogram is combined with the letters of the alphabet notated by the first and last, the α alpha and ω omega, which relate Dionysios' divine names and the properties of the architecture to the *chora* of the church as the 'unlike image of Christ' (see FIG. 7);

4) the image or created work that is *homo-ousion,* 'of the same being / consubstantial' with its origin, ultimately with God, which relates the earthly building materials to God and therefore to the human created in the image of God;

5) the image or created work that is *acheiropoieton*, 'made without hands', that is made through divine agency, such as the masons' work when he allows the earthly material to guide his hands;

6) the state of *anenergesia* (doing while not-doing), whereby God works through the human being who is witness, demonstrated by Jesus as a prophet and healer, and which is the fruit the mason's work while building unsupported domes and vaults.

These themes form a thread within this thesis, connecting *theoria* and *mystagogia*, analogy and method.

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eikon tou theou (the image of God) *'as inspirited matter can be found in Genesis 1:26-28 and 2:7, relating Adam's creation as eikon tou theou.'* Then in the New Testament that, *'Paul writes about eikon as Christ, the gospel, as the bodies of the saints ... Paul equates the eikon of Christ with the incarnate Logos.'* (p. 57)

138. The ladder is commonly known through the dream of Jacob, the Hebrew Patriarch, but continues in John 1:51 KJV *'And he saith unto him, Verily, verily, I say unto you, Hereafter ye shall see heaven open, and the angels of God ascending and descending upon the Son of man.'* See Chapter 4 of this thesis for Dionysios the (pseudo) Areopagite's reformulation of it as the 'divine ray' with its expression in icons.

The concept of the 'unlike image' allows me to incorporate subjective fieldwork experience into the methodology.[139] It has shown me that subjectivity was part of the construction of the community of the early Christian city. Christianity moved the statue of the god out of the centre of the temple and brought the human community inside instead, moving the focus from objective view to subjective experience. One must conclude that Byzantine culture as a whole incorporated subjectivity within a rational philosophy and theology, at all levels from art to text to ritual to architecture.

In in addition to the horizontal axis of the basilica, the domed church building created the *chora* through the six directions of the *chi-ro* . This built two vital figures for the human being and the human community: a central point for 'going within' subjectively and a vertical axis on which to travel in the path towards union with God.

Philosopher Michel Foucault describes the first three of the above six essential themes as a graphic notation of analogy, in '*The Order of Things*'.[140] According to Fontana-Giusti (2013, p. 16), 'Foucault's thought almost organically embraces space and different spatial categories.'

1) The ladder of ascent and descent, or 'divine ray' could be compared with Foucault's chain of *convenientia* which one can visualise as a vertical axis.

2) The concentric rings of *emulatio* are comparable to the *anafora*, the offering of remembrance which we can visualise as the relationship between centre and perimeter.

3) Together they visualise the geometric figure of analogy, 'the core of cognition'[141], generating what Foucault (2002, p. 25) calls 'the space of radiation'.

To Dionysios the (pseudo) Areopagite this space was the realm of emanation from God whereby 'the divine light extends analogously to all, by providence' [HH XIII.3, 301C] (In: Perl 2007, p. 98).[142] I conclude that this is the space of the *chora*.

In his visualisation of similitudes Foucault (2002, p. 24) places 'man' at the

139. This had to 'distill' over time.

140. One can also compare Foucault's four similitudes to Dionysios' works as follows: Convenientia - Symbolic Theology (now lost) and Ecclesiastic Theology; Emulatio - Divine Names; Analogy - Heavenly Hierarchy; Sympathy - Mystagogia (Mystic Theology).

141. Douglas (2001) has called analogy 'the core of cognition' in his Stanford lecture.

142. Here, I prefer the translation of Eric. D. Perl (2007) to Parker, though it lies within Perl's commentary of Dionysios. The notation CH (Celestial Hierarchy) is the same as HH (Heavenly Hierarchy) used by Parker (1897).

centre of the space of analogies. In Dionysios and Maximos the central place is reserved for God, though Maximos at some point places Christ in the centre before returning this place to God. In this he specifically uses the word *anthropos* (human being), referring to Christ as the community, the *ekklisia*. This movement between God and the human being, in community, sets up the need for a *Mystagogia*, a journey of initiation and action for a person to move from his point of view to God's point of view. It is here that the 'method' of the masons becomes a necessary part of the 'analogy' of the 'house of God'.

Dionysios analyses the relationship between God and creation as that of analogy through the 'radiations' of the hierarchy of angels (messengers) and through the divine names,

> ... one God is the universal Source of the emanations, and the Possessor of all the Divine Names we declare; and that the first Name expresses the perfect Providence of the one God, and the other names express certain more general or more particular modes of His Providence. (Dionysios 1897, p.133)

Dionysios brilliantly converts the static geometry of analogy into movement. A path of action, is described in Dionysios' *Mystagogia,* and also that of Maximos. The figures such as the chain (rope) or line, the centre, the perimeter, the space of radiaton all remain the same, but the movement provides a direction of travel for the human being. According to Perl, (2007, p. 90) Dionysios, 'ascribes to soul three "motions," circular, spiral, and linear', all of which are necessary movements for masonry construction. He translates this movement between God (the unitary One) and creation (the diverse multipicity) via divine attributes stating that,

> ...all the individual Laws of Nature are united in one Unity without confusion ... For It is the beginning of all things, whence are derived Very Being, and all things that have any being, all Beginning and End, all Life, Immortality, Wisdom, Order, Harmony, Power, Preservation, Grounding, Distribution, Intelligence, Reason, Perception, Quality, Rest, Motion, Unity, Fusion, Attraction, Cohesion, Differentiation, Definition, and all other Attributes which, by their mere existence, qualify all existent things. (Dionysios 1897, p.138)

These he explains, are associated with qualities that are experienced by analogy with reference to the centre. The principles of such qualities were also extensively analysed as virtues, comparing human virtues and divine virtues, a system which Dionysios inherits and reformulates.[143] The movement allows a person to be moving towards the centre without being there yet. It does not disturb the centrality of God's person, nor does it bar this place from the human person.

143. Plotinus compares human virtues and divine virtues in Ennead 1:2 (Plotinus 1989, pp. 127-147).

In this thesis I shall identify the space of analogy with that of the *chora,* comprising these three motions. It is the space in which a person may undertake a mystagogic journey towards the centre. My research shows that the space of the church was identified as this *chora* and therefore the 'attributes' of the space, such as solid and void, up and down, luminous and dark, divisive and unifying, interior and exterior, heavy and weightless, echoing and silent, heat and cold, sun and shade, tension and compression, unmoving, exact, endless, are comparable to the Divine Names of Dionysios. These were the Master mason's alphabet of design qualities. Through these he guided the intitation and experience of his masons to reach their potential. With these he formed his firm foundations within a watery earth, his walls and doors, his zig-zag cornices as radiant horizons, his four arches as rainbows of the quadrated earthly realm, his overhanging pendentives as craggy peaks, his spherical dome as celestial and weightless.

I conclude that bringing movement to the geometry of analogy is what allows Dionysios and Maximos to address Foucault's fourth similitude of 'sympathy'. According to Foucault, sympathy, or empathy, is a condition of 'identity so strong' that antipathy is generated which maintains the 'isolation of things and prevents their assimilation', the oppositions and distinctions in creation. This sets God apart, 'the same remains the same, rivetted onto itself', and Foucault goes on to critique this condition.[144] Zizioulas (1985) suggests that,

> The ecclesial experience of the Fathers played a decisive role in breaking ontological monism and avoiding the gnostic 'gulf' between God and the world. (Zizioulas, 1985, p. 16)

Of the liturgy (*leitourgia*) as the people's work, he later explains how sympathy and diversity need not create antipathy,

> Truth as communion does not lead to the dissolving of the diversity of beings into one vast ocean of being, but to the affirmation of otherness in and through love. (Zizioulas 1985, p. 106)

and he notes that, 'The distinction between "otherness" and "division" is developed by St. Maximus.' (ibid. p. 106)

Dionysios almost gives us the geometry of masonry dome construction to help us understand,

> For all number pre-exists indivisibly in the number One, and this number contains all things in itself under the form of unity. All number exists as unity in number One, and only when it goes forth from this number is it differenced and multiplied. All the radii of a circle are

144. See Foucault (2002, pp. 27-28) for all quotes in this paragraph.

> concentrated into a single unity in the centre, and this point contains all the straight lines brought together within itself and unified to one another, and to the one starting-point from which they began. (Dionysios 1897, p. 137)

For these early Christian theologians, even though the human may stand in that central place of analogies, the key to the whole system is to give over that place to God.

Earlier, Plotinus had indicated a resolution as a philosopher (lover of wisdom) in which union with 'the One' was, 'an ecstasy and giving up of the self' ('ἔκστασις καὶ ἅπλωσις καὶ ἐπίδοσις αὐτου', Plotinus VI. 9.11.23). Dionysios' theology similarly only allows a human to attain the central place by union with God,

> According to this [union], then, divine things are to be thought, not according to us, but our whole selves standing outside of our whole selves [ὅλους ἐαυτοὺς ὅλων ἑαυτων ἐξισταμένους] and our whole [selves] becoming of God, for it is better to be of God and not of ourselves. (DN VIL1, 865D-868A) (In: Perl 2007, p.97)

Suffice to say that for the human being to attain that central place would require him or her to enter a 'sympathy so strong' as to embody unity in a world of opposites.

In this geometry the human being has to earn their place in the centre through an active mystagogy. On the necessity for experience, St. Mark the Ascetic advises in his 11th saying in the Philokalia,

> Even though knowledge is true, it still not firmly established if unaccompained by works. For everything is established by being put into practice. [145]

For Philo of Alexandria the right attitude for practice (*ascesis*) is to attribute all action to God,

> Even as it is the property of fire to burn and of snow to chill, so it is the property of God to act; nay more by far, inasmuch as He is to all besides the source of action. (Philo Judaeus, Legum Allegoriarum 1:5)[146]

Addressing 'Truth and Communion', Zizoulas believes that,

> Maximos succeeded in nothing less than the miracle of reconciling a circle with a straight

145. St. Mark the Ascetic (1983) saying #11, In: The Philokalia, Vol. 1, Trans. G. Palmer, P. Sherrard, and K. Ware, London: Faber and Faber p. 127

146. In: Wolfson, 1962, *Philo*, Cambridge, Harvard University Press (p. 134). Wolfson is translating the following, *'παύεται γὰρ οὐδέποτε ποιῶν ὁ θεός, ἀλλ ὥσπερ ἴδιον τὸ καίειν πυρὸς καὶ χιόνος τὸ ψύχειν, οὕτως καὶ θεοῦ τὸ ποιεῖν. καὶ πολύ γε μᾶλλον, ὅσῳ καὶ τοῖς ἄλλοις ἅπασιν ἀρχὴ τοῦ δρᾶν ἐστιν.'* (Philo Judaeus, *Legum allegoriarum* 1:5)

line. The way he worked out a relationship between ontology and love, and developed an ontology of love out of the idea of *ekstasis*, may have immense value even in the theology and philosophy of our own days." (Zizioulas, 1985, p. 98)

The work of all these saints and theologians negotiated to maintain a logical yet unbroken connection of love between God and creation in which the human can participate. In Chapter 6, I compare this to the transfer of potential energy down to the earth in the construction of the domed cathedral.

This leads one back to the relevance of praxis, and why the working methods of the masons are at the heart of this research. One must address not only the static figures (of analogy) of the Byzantine masonry church of Hagia Sophia, but also the mystagogic movements of the liturgy, which could be compared with those of the masons. The guided path of action was as essential to the *architekton* or Master mason who empathised with his earthly material as it was to the theological system of the Byzantine church.

If one meditates on the Divine Names trying to connect them within the method of Dionysios' *Mystagogia*, one can find the diversity of attributes and hierarchies co-exist in the unity of the building itself, just as they are offered as a path for meditation in the icons. The wall divides sun and shade yet unites them within its earthly body, just as the antipathies of Foucault's fourth similitude are united in the human person 'created from earth'. The cross-domed masonry church, generated from one point in the centre, effortlessly provides examples of such unity, of what the mind cannot grasp on its own:

'One light shines forth also in its sanctuary by three open windows, And announces to us the mystery of the Trinity', hymns the Sougitha.[147]

The opposing forces of tension and compression are united in the arch, whose existence depends on the continuity of both within itself.[148]

The mason's work building with arches, vaults, and domes, by its nature must unite the straight line with the circle. There cannot be any break in logic when the potential energy at the summit of a dome, as weight, has to come safely down to the ground through the masonry structure. The next three chapters of this thesis will engage with a way of thinking about spatial and material qualities that can provide a design palette for the contemporary architect that could once again engage an apprenticeship system directed towards human self-realisation.

147. See Appendix to this thesis.

148. A catenary arch is formed in maximum tension by a hanging chain in equilibrium in gravity. Reverse the same catenary arch and it finds equilibrium through maximum compression.

3.0 THE EUCHARIST LITURGY AND MASONRY ANALOGIES IN HAGIA SOPHIA, THESSALONIKI

3.1 Introduction to translating between the liturgy and the building of the church via theology.

Theology in architecture can be researched in how the Eucharist liturgy relates to the case study church of Hagia Sophia, Thessaloniki, built as a metropolitan cathedral.[1] One can experience the relationship even today when the Eucharist ritual is celebrated in its early Byzantine cross-domed design. The theoretical basis for this research into ritual and architecture is mainly the work of two theologians, both canonised as saints in the Eastern Christian churches. Dionysios the (pseudo) Areopagite's *Ecclesiastical Hierarchy* and Maximos the Confessor's *Mystagogia* both analyse the liturgy and its sacraments as an expression of theology[2]. Maximos the Confessor refers to church buildings directly and he attributes his inspiration to Dionysios the (pseudo) Areopagite in his *Mystagogia*.[3] Their work links patterns of ritual movement to cognitive patterns in theology, like following a thread of divine guidance through the labyrinth.[4]

Both theologians are particularly relevant to this cathedral church because the timing of their work spans from circa 500 AD for Dionysios' life up to Maximos' death in 662 AD. This was not long before the church's construction around the 8th century AD, giving enough time for their theology to be absorbed into the mainstream but not enough time for it to be superceded. Dionysios' and Maximos' explanations of how theoretical and mystagogic concepts are conveyed by the liturgy, can bring our experience of the architecture closer to these concepts. In addition the descriptions of the liturgy's movements in Hagia Sophia by archbishop Symeon of Thessaloniki, himself a great admirer

1. Liturgy and ritual are sometimes used interchangeably here, or to qualify one another since the word for liturgy (*leitourgia*) contains the word for work (from which we get words like ergonomic) and refers to the entirely of the experience. According to Dix (1949, p. 12) *'The ancients ... habitually spoke of "doing the eucharist" (eucharistiam facere), "performing the mysteries" (mysteria telein), "making the synaxis" (synaxin agein, collectam facere) and "doing the oblation" (oblationem facere, prosphoran poiein).'* Liturgies have written texts but these are not seperate to the actions performed with them.

2. Maximos the Confessor and Patriarch Germanos in the century following him, are unique among Byzantine theologians in that they directly reference church buildings.

3. See 'The Church's Mystagogy: In which are explained the symbolism of certain rites performed in the divine synaxis' (Maximos 1985, pp. 181-225). Specific reference to the source of his inspiration is found in Maximos (Ch 1, p. 186 and Ch. 23 p. 206) .

4. In Christ's *Descent into Hades, Anastasis* or *Resurrection* Icon, the image continues the spatial composition more ancient images of Theseus, who was guided by Ariadne's thread, emerging as a hero from the labyrinth where he had killed the minotaur. In addition, Christ is depicted in the same 'mudra' as Theseus. cf. Della Dora (2016).

of Dionysios' theology, describe aspects of the liturgy's theological relationship with this cathedral.[5] Though Symeon wrote in the early 15th century, the liturgical forms he followed had hardly changed from the 8th century, giving us a good idea of the cathedral's liturgy at the time of construction.

In search of this relationship, one must first ask what are the fundamental theoretical and mystagogic concepts that the liturgy is conveying, and how does it convey them relative to the church building? The liturgy works as a relationship of people; it cannot be celebrated alone. Its root is in the relationship of Jesus with his disciples. Its message is conveyed by a person who leads the *synaxis (*assembly*)*, namely the bishop, priest, *hierarch* in Dionysios' terminology, or 'any person, if necessary' (Ferrette, 1866. p.xx).[6] It is learned through the senses by the people of the assembly, as well as the deacons and choir who respond.[7] This entire antiphonic body is the *synaxis*.[8] Orthodox Christianity's method of guidance is by experience, much as breaking bread and drinking wine in the Last Supper was an experienced lesson. The 'breaking of the bread' was closely connected to the 'unveiling of the scripture' told in Luke 24:25-35, in which the resurrected Christ 'unveiled' the scripture (Old Testament) to his disciples by interpreting all the scriptural things concerning himself. His disciples were unable to recognise him until he broke the bread.[9] The liturgy was to be the key for them to 'see' the inner meaning of scripture through prophetic eyes. Every aspect of the liturgical ritual, from gestures, to music, to words, to images, to its sacramental objects, and its architecture, is there to support and reinforce the message conveyed by the 'person' and learned through the senses.[10]

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5. Symeon drew inspiration from Dionysios, evidenced in sections of his Explanation of the Divine Temple: Symeon (2011, vs. 24 - 42, pp. 97-111).

6. Ferrette, Rev. Jules (1866) *The Damascus Ritual, A Complete Liturgy.* Oxford & London: James Parker & Co.

7. Both the *hierarch* leading and the people responding were seen to be active according to Dix (1949, p.12), *'... the ancients used all their active language about "doing" the liturgy quite indifferently of laity and clergy alike.'*

8. From the Greek root words συν- (with, together) -αγειν (to lead or guide). According to Isar (2004, p. 80), *'As it comes out from Pseudo-Dionysus' writings, the Synaxis defines both the community and the liturgical act of communion, the gathering of people, that is, koinonia or ekklesia, as well as the sacred rite of the Eucharist, giving full meaning to the concept of sacred space which was performed in the Byzantine church in 6th c'.* For this reason, the word assembly or *synaxis* is generally used in this thesis to denote the active purpose of assembly and the sacred 'space' which it engenders.

9. See also Behr (2016), who references the apostle Paul (Rom. 16:25-7; 2 Corr. 3-4; and 2 Corr. 3:12 - 4:6).

10. *'By 'person' is meant the person of Jesus, followed by those in apostolic succession who represented him as hierarch. Evidence for appointing the hierarch is scant in the first centuries, but is confirmed by the dais or pulpitum in Dura Europos in the mid 3rd century.'* (Doig, 2016, p. 16).

An essential ingredient of this living relationship is the love of which St. Paul spoke,

> Though I speak with the tongues of men and of angels, but have not love, I have become as sounding brass or a clanging cymbal. (Cor. 13:1, NKJV)[11]

Interpreting this phrase of St. Paul, one could say that without love the symbols of the liturgy have no counterpart in the person's inner life, and they sound hollow or meaningless. Its anagogic steps, constructed with the language of analogy through words, movements, scents, tastes, sounds and sights, would lead nowhere without the mystagogy that elicits love.[12]

It is 'not merely to offer us a simple picture but to create in us a feeling.' wrote the liturgical commentator, Nikolaos Casabilas (1977, p. 30) whose uncle was the archibishop of Thessaloniki from 1320-1323. If we include architecture as part of the experience of the liturgy, then St. Paul's ingredient of love must also transfer to it, both during the liturgy and during construction.[13]

Early Christian theologians had to bridge the religious divide between the old consciousness of classical Greece and Rome and a new Christian one. The old drama of the human being as the tragic protagonist in a cosmic struggle, had to be replaced by prophets who acted in harmony with God's will and received the blessing of the Holy Spirit.[14] These theologians integrated Hebrew prophetic theology and Hellenic philosophy. This same theology, whose practices centuries before were believed to undermine the traditional Hellenic gods, entered into the mainstream of religion in the late Roman Empire through Christianity.[15]

It was the experience of the Eucharist liturgy that enabled theologians like

11. For references to the Bible in English translation, I have used the common abbreviations: KJV (Kings James Version), NKJV (New King James Version), NIV (New International Version) and so on (see Bibliography). I have generally used the King James Version, but give preference to others when I feel they better express the Greek or Hebrew sources. The greek text here reads: *''Εὰν ταῖς γλώσσαις τῶν ἀνθρώπων λαλῶ, καὶ τῶν ἀγγέλων, ἀγάπην δὲ μὴ ἔχω, γέγονα χαλκὸς ἠχῶν, ἢ κύμβαλον ἀλαλάζον.'* (ΠΡΟΣ ΚΟΡΙΝΘΙΟΥΣ Α΄ 13:1 Greek New Testament: Greek Orthodox Church)

12. See Glossary for *anagogy* and *mystagogy*.

13. At the end of this chapter and in the appendix, interviews with Master masons confirm that the capacity to build such a structure requires love, and this will also be explored in more detail in Chapter 5. Doig (2016) attributes the emergence of the church building as a sacrament to the formation of the Byzantine Rite (Chapter 3, p. 53).

14. Examples of the tragic protagonist range from Promoetheus to Oedipus, Antigone, and more.

15. One must not forget that Socrates was executed by the Athenian State for 'corrupting the youth' and spreading the dangerous thinking of philosophy. In his trial Socrates describes his accusers, *'He says that I am a maker of gods; and so he is prosecuting me, he says, for inventing new gods, and for not believing in the old ones.'* (Plato 1895, p. 4)

Dionysios and Maximos to achieve this monotheistic integration, through God's incarnation as Christ. According to theologian John Zizioulas,

> The ecclesial experience of the Fathers played a decisive role in breaking ontological monism and avoiding the gnostic 'gulf' between God and the world … This experience revealed something very important: the being of God could only be known through personal relationships and personal love. Being means life, and life means communion. (Zizioulas, 1985, p.16)

The Eucharist's shared experience was, in the early centuries, an intense one in which every baptised person fully participated, experiencing its sights, sounds, smells, and tastes. By the end of the 5th century, according to Dionysios, the chanting and co-ordinated movement, individual gestures, silent meditation and prayer of the heart,

> [...] is uniquely called 'communion and *synaxis*' when each consecrating function both collects our divided lives and gives communication and union with the One, by the Godlike folding together of our diversities. (Dionysios 1897, EH III.1, p. 206)[16]

The liturgy was experienced with all the senses and was a renewal of the senses. It sequestered the senses and then guided them away from the limited logic of a closed mind to 'the Godlike reality of the archetypes ' (Ibid, EH III.3, p. 207) using an orderly method.

> So great and beautiful are the intelligible visions of the most holy Synaxis, which minister hierarchically, as we have often said, our participation in, and collection towards, the One. (Ibid. 1897, EH, IV: I, p. 217)

Though today's experience has become much more contemplative, being strongly influenced by the post-imperial and monastic liturgical tradition, it is sufficient for entering the Byzantine consciousness and its concepts, for the purpose of this thesis.

3.2 Some basic points about the Eucharist liturgy

A brief look at the essential simplicity of Jesus' original teaching and its subsequent development into a ritual which is performed in and around the church buildings and the city will be followed by the ritual stages of the eucharist liturgy as it is celebrated in Hagia Sophia today. I observe how the movement of the initiates through the church establishes a symbolic pattern, which at some point sets in motion an analogous movement within a person; the outer actions become the key to inner activation, like true symbols.

16. Page numbers for all quotes for Dionysios' works, unless otherwise noted, reference the 1897 translations by Rev. John Parker. Ecclesiastical hierarchy is notated as EH, Heavenly hierarchy (Angelic or Celestial hierarchy) as HH, Divine Names as DN, and Mystagogia as MT.

The Eucharist (thanksgiving) ceremony has its origins in Jesus' teachings as a person. Any study of this liturgy in relation with architecture must be founded in the Gospels themselves. It started as a simple meal (Jewish *seder*) where Jesus gave thanks and broke bread with his students, the disciples who later became the Apostles. He gave them some of his last teachings, in the 'upper room of Zion'.[17]

When Jesus was alive, his personal presence was a wordless touchstone for his disciples. Fourteen places in the gospels record that his person literally healed someone:

> 'Who touched me?' Jesus asked. When they all denied it, Peter said, 'Master, the people are crowding and pressing against you.' But Jesus said, 'Someone touched me; I know that power has gone out from me.' Then the woman, seeing that she could not go unnoticed, came trembling and fell at his feet. In the presence of all the people, she told why she had touched him and how she had been instantly healed. Then he said to her, 'Daughter, your faith has healed you. Go in peace.' (Luke 8:44-48, NIV)

As a masterful teacher of truth, Jesus showed to his disciples and those who followed afterwards that even on His day of rest, 'God is not solely an unmoved mover. He is also moved'.[18] Several centuries later the 'synthesis of rest and motion', which Gregory of Nyssa called 'the highest paradox of all ... how motion and rest can be the same thing' was developing into the Christian liturgy, arts, and way of life.[19]

In the 7th century, Maximos clarified that divine rest (ἀργία) is an active condition 'and is labelled "grace" (χάρις).'[20] With an image of 'the soul as an arrow shooting across the vast space of eternity and resting quietly in the hands

17. The meal in which the eucharist was taught was later known as 'the last supper'. This 'upper room' in Zion was used by Jesus and his disciples, as mentioned in Luke 22:10-12, John 20:19, Acts 2:1-4, Mark 14:12-25. The Sougitha (v.15) refers to this 'upper room' as, 'In the middle is placed on a podium after the model of the upper room of Zion, And underneath it are eleven columns like the eleven Apostles who were hidden therein.' (In: Mango, 1972, p. 59). One can regard Hagia Sophia's dome above its podium as the 'upper room', and her eleven columns surrounding the upper gallery as the eleven apostles, hidden in plain sight as it were.

18. Romanides (2013, pp. 71-73)

19. Von Balthazar (2003, loc. 2298 of 8806)

20. Von Balthazar (2003) Cosmic Liturgy: The Universe according to Maximos the Confessor (Loc. 2342 of 8806) *'Therefore this model of the "transcendental" realization of being can also take two other forms. First, it can be expressed psychologically: here the first stage is that of potentiality, the simple "equipment" of nature (δύναμις); the second, the state of activation (ἐνέργεια); the third, that of relaxation and rest (ἀργία). But this psychological pattern, in turn, points to another ontological and theological one, in which the first stage is that of pure essence or nature (οὐσία), the second the intellectual and free realization of this nature as "relationship" (σχέσις) or "intentionality", while the third stage breaks out of the boundaries of self-contained nature and is labeled "grace" (χάρις).'*

of the divine bowman' he linked a Cosmic Liturgy with what had become the earthly one in memory of such teachings.[21]

At his final simple *seder* with his disciples, the Last Supper, Jesus gave them instructions for bringing his tangible personal presence to them (see Fig. 1). The goal was to remember God, but he would be the 'way' for their faith to reach this goal, as it had been with the woman he healed.[22] The gospel of Luke reports,

> And he took the cup, and gave thanks, and said, Take this, and divide it among yourselves. For I say unto you, I will not drink of the fruit of the vine until the kingdom of God shall come. And he took bread, and gave thanks, and brake it, and gave unto them saying, This is my body which is given for you: this do in remembrance of me. Likewise also the cup after supper, saying, This cup is the new testament in my blood, which is shed for you. (Luke 22:17-20, KJV)

He asked his disciples to repeat his words and actions in this first Eucharist ceremony, and he gave them a new commandment,

> A new command I give you: Love one another. As I have loved you, so you must love one another. By this everyone will know that you are my disciples, if you love one another. (John 13:34-35 NIV)

This teaching of Jesus developed into the Eucharist liturgy, with the explicit goal of remembering God through his person, through the sacraments of the bread and wine, and in community. It became the liturgical offering up (*anafora*) of the bread and wine as an example of what is 'transferred from objects of sense to things divine'.[23] The early Christian communities grew through the Eucharist meals of remembrance. A new, secret language which used everyday symbols emerged centered around the simple actions of eating together (eucharist), bathing (baptism), and helping one another in his name (*diaconia*). These shared everyday symbols were able to promote a genuine love and cohesiveness between the diverse peoples of the vast Roman empire.

Due to its nature, architectural change happens more slowly than social change, thus the architecture that developed to reflect Jesus' message was built centuries later. However, liturgy and architecture did develop relative to each

21. Von Balthazar (2003, loc. 2298 of 8806)

22. 'Jesus saith unto him, I am the way, the truth, and the life: no man cometh unto the Father, but by me.' (John 14:6, KJV) In Dionysios' Ecclesiastical Hierarchy, the Hierarchs of the apostolic succession, who carried on the lineage of Jesus' teachings, are described as sources of healing energy and *'a conducting guidance for the soul'* (Dionysios 1897, p. 201). The goal of 'remembrance' is what Hellenistic culture at the time called *henosis or theosis*.

23. Dionysios 1897, MT III: 1, p. 92

other. The next sections of this chapter continue to summarise the development of the early liturgy relative to the history of the physical church, with reference to Hagia Sophia in Thessaloniki as a case study.

3.3 Evolution of the liturgies and the architecture

The earliest known versions of the Christian liturgy are remarkably similar to each other, despite developing in secret without any central Christian authority during the first three centuries AD. We have evidence of three pre-Nicene forms of the eucharist liturgy from three major centres of early Christianity: from Rome, the liturgy of St. Hippolytus, originally written in 215 AD in Greek which was the language of the common man at the time; from Alexandria the liturgy ascribed to St. Sarapion of the 4th century, recorded in the 11th century in Latin; and from Syria, the liturgy of SS. Addai and Mari of Antioch (2nd or early 3rd century) in Aramaic/Syriac.[24] They show us a simple ceremonial pattern that is nevertheless clear, distinct, and coherent.[25] By their similarity, one can argue for a genuine apostolic succession and that the Christian groups stayed close to the original instructions of Jesus. One must remember that these early groups were illegal in Roman law and they risked severe punishment or death, should they be called to witness.[26] They congregated within private homes (*domus ecclesiae*) and apartments, or in cemeteries under the pretext of a dinner for the dead, as was common in classical Rome.[27] The same essential sequence of concepts as these early pre-Nicene liturgies, are retained in the liturgies celebrated today

24. The Syriac litury of St. James, still in current use, is a later adoption from Jerusalem to Antioch, according to Dix (2000, pp. 175-178) *'What may be called the 'patriarchal' rite of Syria was the so-called Liturgy of S.James. It is generally taken that, as it stands, this is not the old local rite of Antioch, which is known to us only obscurely from a number of sources, of which the most reliable are hints to be followed in the Antiochene writings of S. John Chrysostom (c. A.D. 360-397). S. James as it stands is closely connected with the fourth century rite of Jerusalem, which was adopted by the Antiochene church at some point in the fifth century- when is uncertain.'*

25. By pre-Nicene is meant a time before the first consensus-seeking Council of Nicaea (325 AD). The word 'eucharist' literally means 'giving thanks'. It has the Greek root εὖ meaning good/well, and -χαριστ(ε)ῶ the verbal form of χάρις meaning grace/blessing.

26. The greek word for 'to bear witness' is *martyr(e)o* giving us the word 'martyr'. The word itself has no connotation of sacrifice or death. It gained these connotations during early Christian persecution under Roman law, because those who testified to being Christian faced execution. Today in Greek the word *martyras* is still far more likely to mean a witness in court, or a truthful witness, than someone who dies by witnessing.

27. One such domus ecclesiae has been excavated at Dura Europos and illustrated in Krautheimer (1986, p. 27). However, not enough evidence exists to link its spatial order to these early liturgies. At the end of the 2nd century, Tertullian's Apology gives us a glimpse of *'the modest supper-room of the Christians', called agape, which he contrasts the lavish rituals of the permitted religions, 'The participants before reclining, taste first the prayer to God. As much is eaten as satisfies the cravings of hunger; as much drunk as benefits the chaste. [...] After manual ablution, and bringing in of lights, each is asked to stand forth and sing, as he can, a hymn to God, either one from the holy Scriptures, or one of his own composing [...] As the feast commenced with prayer, so with prayer it is closed.'* (Tertullian, Apology, loc. 1069-1079 of 24297)



FIG. 1 Top Left: 6th century mosaic of the Last Supper, Church of Sant'Apollinare Nuovo, Ravenna.
Available from: https://pbs.twimg.com/media/EVQpxGfXgAE9Kfm?format=jpg&name=medium [Accessed: 30 January, 2021]



FIG. 2 Mid-Left: 14th century mosaic, in Church of the Saviour in Chora, Constantinople. Jesus healing the woman on the Sabbath.
Photo: Yasin Karabacak



FIG. 3 Left: St. John Chrysostom, Ravenna, 6th century.
Available from: https://upload.wikimedia.org/wikipe- dia/commons/c/cf/Johnchrysostom.jpg [Accessed: 30 January,
2021]

in Hagia Sophia, Thessaloniki. The conservatism of the Eastern and Orthodox churches' liturgies allows us to trace their origins to the early liturgies while following the changes in the form of the ritual over the next centuries.

The historical development of the liturgies used today involves the relationship between the lay congregations and their ordained priests, the Emperor's participation in the liturgy, the monastic contribution, and the pre-existing Roman architecture. In the two centuries following the legalisation of Christian worship by the Edict of Milan in 313 AD, public liturgies quickly developed, with a processional metropolitan character, each having its own local variation on the theme.[28] Large Christian assemblies were worshipping, with the participation of the highest public officials, including the Emperor. According to Baldovin (1987, p. 254),

> 'it was in the urban context of ethnic diversity and large populations that the solution to the problem of unity was found in a mobile system of worship. This system reinforced the unity of the various urban groups and thus permitted diversity as well as unity.'

The processions sang psalms, stopping at significant 'stations' in the city for blessings and finally entered a converted or purpose built Basilica for the liturgy.[29]

In these early years of the formation of the liturgy the original church at the site of present day Hagia Sophia, Thessaloniki, was the large 5-aisle Basilica of St. Mark, whose construction Theoharidou (1988) dates to the late 4th century.[30] Probably purpose-built as a church, but possibly adapted from an existing Roman basilica for early use as a church (see Fig. 7), the forms are indistinguishable since only the bust of the Emperor and his magistrates would have had to be removed.[31] After a ceremony of consecration and dedication as a church, Christ would have been placed as the ultimate authority over the Emperor and the altar along with the seated bishops, representing Christ, would have re-

28. Eusebius' 4th century *Historia Ecclesiastica* (Ἐκκλησιαστικὴ ἱστορία) provides an account of this rapid development in the 3rd- 4th century.

29. The word 'Basilica' derives from the Greek word for king (βασιλεύς, basileus). The initial use of a Basilica, an official Roman building type dedicated to the municipal courts of the Emperor and to the marketplace, can be seen as a 'marriage of convenience' for the small, private gatherings in which the liturgies had developed.

30. Theoharidou (1988, p. 126) analyses the brick types and composition of the hydraulic mortar to give its date as the same as *'the first phase of the Rotonda and parts of the Galerian complex and the Octagon'*.

31. Whether it was initially built for Christian use or not, it would have been built under a Roman Emperor as part of the predominantly polytheist city of Thessaloniki, as a basilica dedicated to the Roman city and its civic functions.

placed the magistrates in the apse to the east.[32] This 5-aisle Basilica comprised a colonnaded forecourt to the west, entrances into a portico (later to become the outer narthex of Hagia Sophia), and a long central hall or nave with an apse at the eastern end.

The late fourth century Roman empire was far from Christian. Gaul, Spain, and Italy were fully pagan except for the urban areas, with Rome and Milan being over half pagan until the 390s.[33] We can assume that Thessaloniki was not more Christian than Rome. Paganism survived for another three centuries outside the towns, hence the epithet *pagani* meaning 'rustics'. It was in the cities that change happened because 'in the ancient world the city *was* civilization ... in terms of the development of specific liturgical forms, the city was the centre of Christianity' (Baldovin, 1987, p. 254). There was turbulent disagreement among Christians themselves evidenced by the many decisions taken by Ecclesiastical Councils of assembled Bishops, from the 1st Nicaean council in 325 AD until the last major council in 787 AD.[34]

During these centuries the liturgies developed new traits which were very much connected to the physical space of the city, as well as to their new civic role. The following traits distinguish them from the early pre-Nicene liturgies: Firstly, there developed stational processions which was well suited to including public officials, priests, and Christian public.

> [The] stational liturgy as a whole manifested in a public way the strong desire for unity that Christian writers had demonstrated from the earliest of days. ... The practical result of this desire was the central position of the bishop as each city's liturgical leader, around whom the stational liturgy was organised' (Baldovin, 1987, p. 230).

This must have worked very well with the large forecourt and long nave of the early basilican churches, as the axis of the basilican nave was not filled by the assembly. Even today in the Orthodox domed church, a central passage is left open for the priests to process. Such processional liturgies were in keeping with the Roman aesthetic of the sanctity of the entire city and its essential streets, the cardo and decumanus.

The Christian procession and return, between the city and its cathedral, allowed the new relationship between the earthly and the heavenly city to devel-

32. Kratheimer describes the Roman basilica as a large meeting hall, used as a covered extension to the forum and that, '*the Christian basilica was viewed as just another monumental public meeting hall with religious overtones'* (Krautheimer 1986, p.42)

33. Hopkins (1998, pp. 185-226).

34. For example, the Edict of 380 AD, jointly issued in Thessaloniki, by the Emperors Theodosius I, Gratian, and Valentinian II, enforced a unitary Nicene creed and designated Christianity as the State religion.

op. The liturgical year 'provided a broad framework' for processions to sanctify the space of the city, setting up its monuments, holy shrines, and places of assembly in dialogue with each other. This dialogue existed 'between the development of the liturgical calendar … and the urban space in which this calendar became a living reality', according to Baldovin (1987, p. 230). Thessaloniki had three central basilicas, the Achiropoeitos, St. Demetrios, and St. Mark (predecessor to Hagia Sophia). The early 'cathedral' liturgy continued to process from the Acheiropoeitos Basilica to Hagia Sophia along the city streets up until the 15th century (see Fig. 3).[35] Fountoules' (1968) edition of *Symeon of Thessaloniki's Liturgical Commentaries*, sets out the monthly liturgies and prayers that were celebrated stationally in rotation at the different churches around the city.

Secondly, antiphonic chanting or singing developed, expressing the concept of procession and return, and also that of mirroring through echoing. Antiphonic chanting was usually between the priests and the assembly but was also between the choir and the assembly, sometimes within the church and sometimes in the city spaces outside the church. Potential for antiphony existed with the men and women placed in the right and left aisles of basilicas, and between the *naos* and the upper galleries when they existed. Antiphonic chanting creates a dialogue back and forth, embodying that sameness and difference of analogy. It resonates off the space of the building or off the space of a public courtyard, city square (*plateia* in Greek), and its streets. This effect was heightened in vaults and domes which have a natural echo.[36] In the Eucharist liturgy today antiphons continue to be sung by the deacons as a vestige of the processional psalms before the entrance into the church.[37]

Thirdly, the aspect of supplication known as *lite* or *litaneia* within the Eucharist ceremony was greatly expanded. Theophanes the Confessor records processions of supplication and deliverance from disaster in Constantinople, in response to earthquakes (eight up to 812), drought (562), such that 'by the early seventh century commemorating the salvation of the city and liturgical processions went hand in hand' (Baldovin, p. 187). The repetitions of 'Lord have

35. Gersel et Al. (2013, pp. 177-213) have a good analysis of the main processional between the Acheiropoietos Basilica and the Cathedral of Hagia Sophia in Thessaloniki until 1430.

36. According to Strunk (1977, p. 114) by Symeon's time in the 15th century, *'there was a well-established name for the office of the Great Church [Hagia Sophia in Constantinople]. It was called the ἀκολουθία ψαματική - the "chanted" or "choral" office.'* He quotes Symeon's description of the Vesper antiphons that, *'the whole psalm ... is recited verse by verse by the two choirs in turn ... they sing the "Glory to thee, O God," at every verse ... Then they sing the "Glory be to the Father" with the "Glory to thee, O God," and the other choir sings the "And now and ever"'* (ibid. p. 118).

37. The deacons' positions on the bema, close to the iconostasis under the broad arch, takes advantage of the way its form sends the echo back and forth from side to side of the arch.

TABLE 1 (author's conceptual notes, anagogic)	**Liturgy of the pre-Nicene church written down by Hippolytus in Rome in 215 AD: (Dix, 2000, *Ch. VII The Eucharistic Prayer*)**
Essence	a) We render thanks unto Thee, O God, through Thy Beloved Servant Jesus Christ, Whom in the last times Thou didst send (to be) a Saviour and Redeemer and the Angel of Thy counsel; Who is Thy Word inseparable (from Thee)
Munificence	b) Through Whom Thou madest all things and in Whom Thou wast well-pleased
Incarnation	c) Whom Thou didst send from heaven into the Virgin's womb, and Who conceived within her was made flesh, and demonstrated to be Thy Son, being born of Holy Spirit and a Virgin
Compassion	d) Who fulfilling Thy will and procuring for Thee an holy people, stretched forth His hands for suffering (*or* for the passion) that He might release from sufferings them who have believed in Thee
Surrender to God's will	e) Who when He was betrayed to voluntary suffering (*or* the passion) in order that He might abolish death and rend the bonds of the devil and tread down hell and enlighten the righteous and establish the ordinance and demonstrate the resurrection
Sacrifice	f) Taking bread (and) making eucharist to Thee, said: Take, eat; this is My Body, which is [or will be] broken for you
	f) Likewise also the cup, saying: This is My Blood which is shed for you
Remembrance	g) When ye do this ye do [or make ye] My 'anamnesis'
	h) Now, therefore, doing the 'anamnesis' of His death and resurrection
Raising Up (Anafora)	i) We offer to Thee the bread and cup
Communion	j) Making eucharist to Thee because Thou hast made us worthy to stand before Thee and minister as priests to Thee
Holy Spirit	k) And we pray Thee that [*Thou wouldest send Thy Holy Spirit upon the oblation of Thy holy church*] Thou wouldest grant to all who partake to be made one, that they may be fulfilled with (the) Holy Spirit for the confirmation of (their) faith in truth
Thanks and Praise	l) That we may praise and glorify Thee through Thy Servant Jesus Christ through Whom honour and glory (be) unto Thee with (the) Holy Spirit in Thy holy church, now and for ever and world without end

FIG. 4 Above: Table 1, The Pre-Nicene Liturgy of Hippolytus

The text and numbering of the liturgy has been copied from Dom Gregory Dix' book The Shape of the Liturgy.

Mercy' and 'Lord save us' that recur like a foundational rhythm in the litugy of today evolved as a response to these conditions.[38]

The establishment of Christianity and its spread as an officially sanctioned, urban, imperial and indeed universal religion was fraught with uncertainties. The need to reconcile its early beginnings with being both the religion of the people and the religion of a multi-cultural, multi-lingual empire, was beset by theological disputes, popular uprisings, natural disasters and wars, including the iconoclast controversy. The support of the Emperors allowed the integration of a wealth of the empire's diverse historical cultures, including Greco-Roman symbolism.[39] At the same time the challenge of integrating the early Christian liturgy into the mainstream imperial Roman culture, without compromising its message, led to times of turbulence. It became a time of innovation, a creative time of rising to immediate challenges, and a time that required tolerance, negotiation, collaboration, and adjustment. Today's liturgies reflect this in their historical evolution.

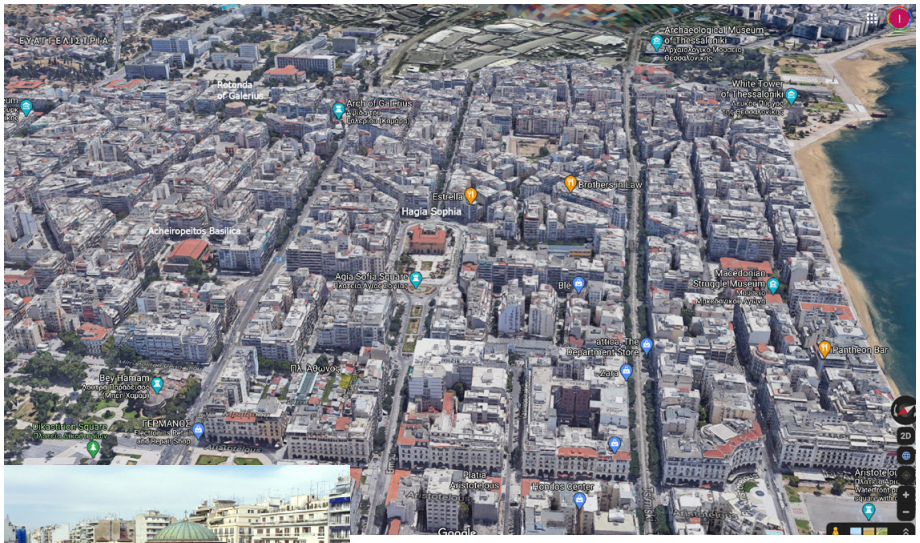
3.4 Development of liturgy in relation to the cross-domed Cathedral of Hagia Sophia, Thessaloniki

Hagia Sophia Thessaloniki has seen around thirteen centuries of human activity, including periods as the city's metropolitan cathedral.[40] It presents a unique example of a cross-domed church continuing a liturgical form which was developed for the basilica. The five-aisle basilica of St. Mark, where Hagia Sophia Thessaloniki now stands, was a church of the Christian Roman Empire under the jurisdiction of the Church of Rome from the fourth century until 732 AD. Its earliest form of liturgy may well have evolved from Hippolytus' 3rd century example influenced by the Roman stational system. The present church was constructed in the Transitional period (6th - 9th century) and probably completed at the end of the 8th century for the Orthodox liturgical rites. It was a Catholic cathedral (1205-24) after the city fell to the Latins, and about a hundred years after the Ottoman conquest of 1430, between 1520 and 1536, it was con-

38. Despite the persecution of the Christians before the Edict of Milan, the pre-Nicene liturgies do not include a section for repentance and asking for God's mercy to deliver his people from suffering. This was probably assumed but is not expressed in the surviving texts in which Christ is described as a redeemer who extends his healing hands.

39. *'What was appropriate to the earthly emperor was equally appropriate to Christ, and so the art of the church did not hesitate to borrow from the pre-existing art of the court. [...] If the art of the fourth and fifth centuries may be viewed as a degradation of the classical style, such a standard is no longer adequate for judging the art of Justinian's epoch. At a date not far removed from 500 AD there accured an aesthetic change. We are not yet in a position to explain how or why it came about, but there are indications that the new style was introduced deliberately and in the highest circles of society.'* (Mango, 1994, p. 261)

40. Theoharidou (1988, p.3).





Maps available from: https://www.google.com/maps/place/Cathedral+Church+of+Agia+Sophia+of+Thessalonica/ [Accessed: 29 August 2020]

FIG. 5 Above: Aerial map showing Hagia Sophia (centre), implanted in the heart of the city; the relationship with the Acheiropoeitos Basilica and the Rotonda. Processional liturgies before 1430 would have followed the streets, between the Acheiropoeitos and Hagia Sophia.



FIG. 6 Left: Approach to Hagia Sophia from the Roman nymphaeum whose spring water is still running.
Photo by author.

FIG. 7 Below: The many approaches to Hagia Sophia, where streets converge. The main entrance to the forecourt from the west.



verted into a mosque.[41] When Thessaloniki joined the modern Greek state in 1912 Hagia Sophia reverted to an Orthodox Christian church adopting the monastic liturgical form thereafter.[42]

The first written reference to Hagia Sophia is in a letter of St. Theodore the Studite, the same who campaigned against iconoclasm.[43] Sent from his exile in Thessaloniki to his uncle Plato in 797 AD, he relates how the city's overlord sent him to the archbishop, advising him to pray first in Hagia Sophia, probably a politically correct move.[44] We know that shortly before his visit it had been adorned with aniconic mosaics, dated to 787 AD, some of which exist today. His letter implies that it was the metropolitan cathedral by the end of the 8th century, since the archbishop received him there and in his adjoining residence, the archbishopric.[45]

41. After the Ottoman conquest of 1430, the Acheiropoeiton basilica is thought to have become the 'conquest mosque', ending the practice of the stational liturgy between it and Hagia Sophia. One might assume that public, processional, and choral aspects, that were so much part of Hagia Sophia liturgical function in the city, were also curtailed and stopped completely when Hagia Sophia became a mosque in the 16th century

42. Cormack (1980-81, pp. 121-122) has detailed notes on the date of Mosque conversion, and dates it to between 1530 and 1536. An edited version of his footnote is as follows: *'The precise date of the conversion of S. Sophia into a mosque remains an unresolved issue despite the apparent precision of many writers. ... The most important study on the problem in F. Babinger, Ein Freibrief Mehmeds II, des Erobers, für das Kloster Hagia Sophia zu Saloniki, eigentum der Sultan- ini Mara (1459), BZ 44 (1951), 10-20, who gives the reasons for dating the conversion between 1520 and 1536. The problems against accepting the opinion of Kiel lie in the following evidence:*
a. The traveller who describes the Pantocrator in the dome was in fact the Venetian see ambassador of 1591,see B. Cecchetti, F. Stefani, and G. Berehet, Viaggio di un ambasciatore Veneziano da Venezia a Costantinopoli nel 1591, Venice, 1886. A translation of this text is given by K. D. Mertzios, Μνημεία Μακεδόνι κες 'Ιστορίας, Thessaloniki (1947, p. 125). What the text actually says is that whereas the Rotunda was turned into a mosque some seven months before his visit at the end of May 1591, it was the case that S. Sophia had been converted many years previously ("fatta molti anni sono moschea").
b. According to Stephan Gerlach, Tagebuch, Frankfurt, 1674,as quoted by Theocharides in the article given above (p. 56), the Metropolitan of Thessaloniki reported to the Patriarch in 1576 that the Turks held three large churches and three smaller ones. Since the Rotunda was still in Christian use, the large churches should be: the Acheiropoietos (converted immediately after 1430); S. Demetrios (converted in Hegira 898 = 1491); and S. Sophia.
c. Babinger, cited above, quotes the geographical writings of Mehmed ben ömer ben Bayazid (1555 - 1600) as stating that the conversion of S. Sophia was ordered by the Grand Vizier of Sultan Suleiman I (1520 - 66), namely Ibrahim Pasha, who was strangled on 15 March 1536. He is said in this source to have founded a minaret and a fountain in the garden at the same time. These three pieces of evidence seem to point to the conversion of S. Sophia between 1520 and 1536.'

43. See Efthymiadis, S. (1995) Notes on the Correspondence of Theodore the Studite In: Revue des Etudes Byzantines, Issue No. 53, pp. 141-163); Epistles of Theodore the Studite, I, 3: Migne, PG 99, cols. 913 - 20, esp. 917C. Epistles of Theodore the Studite, Epistle 3:ll. 108-116, p. 15

44. This was a time in which many Christian theological disputes were decided upon, the religion of the old pantheon of gods and goddesses was eventually extinguished, and two iconoclastic periods caused the destruction and reinstatement of visual images in the religious life of Christians.

45. The walls to the north of the cathedral are thought to be remaining stones from the archbish-

In 732, the Emperor Leo I, an iconoclast with strong differences with the church in Rome, ruled that all bishops of Illyria (Macedonia) were to go under the jurisdiction of Constantinople.[46] Thereafter its liturgy turned to follow the example of the 'Great Church', Hagia Sophia in Constantinople. Sometime later, within the 8th century, the basilican church was remodelled into its current form as Hagia Sophia cathedral. It gained a cross-domed core and the other distinctive features common to the Transitional churches of Asia Minor.[47] The Byzantine masons fitted the new cathedral into the ruins of the much larger 5-aisle basilica, using the front of the basilica as an exo-narthex, and also including the forecourt and colonnades, which would have allowed continuity of the processional form of liturgy. Parts of the basilica and forecourt are visible today above ground, with walls alongside and below the church. At some point, the consecrated ground of the eastern end of the basilica included a cemetery, and traces of this usage still remain.[48] Thus the present cross-domed church of Hagia Sophia in Thessaloniki, and its basilican component, represents a time when Christian architecture and liturgy were evolving together.

In the pre-iconoclastic period up to 726 AD it is generally accepted that the cathedral liturgies dominated the canons of worship for the laity.[49] The cathedral rite of Constantinople developed from the basilican stational liturgies of late antiquity.[50] This liturgy had developed an imperial character after the construction of the Justinianic domed cathedral. The 'Great Entrance' and the Cherubimic Hymn were added at this time.[51] Pentcheva (2016, p. 5) enumerates the complete liturgical system of rites as: the Divine Liturgy or Eucharist; the mysteries (sacraments) of baptism, chrismation, marriage, unction, penance, and

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opric. It has also been suggested that a blocked up door on Hagia Sophia's north facade had connected directly to the Archbishopric via a bridge (see Fig. 11).

46. Leo I was known as 'the Isaurian' though his family was from Syria

47. See Chapter 2 (pp. 73-84) and for the particular features see pp. 80-82.

48. The area was not used for ordinary burials. Symeon (2011, p. 89) writes of treating *'the sacred temples with respect, not allowing the remains of any ordinary person to be buried in them.'*

49. The First Iconoclasm, as it is sometimes called, existed between about 726 and 787 AD. The Second Iconoclasm was between 814 and 842 AD.

50. These consisted of processions that celebrated stages (stations) at different churches along the ritual itinerary.

51. *'The cathedral rite experienced two periods of synthesis where it integrated elements from the monastic rites. The first synthesis employed aspects of the liturgy of the Stoudios monastery, introduced in the 9th century in the capital, and lasted up to 1204. The second synthesis unfolded after the interruption due to the Latin occupation of Constantinople (1204–1261); at that point the cathedral rite, re-instituted in Hagia Sophia, fused elements from the Neo-Sabaitic rite that had developed in both Constantinopolitan and Mount Athos monasteries in the 11th century. A late and final form of this elaborate cathedral synthesis was also performed in Hagia Sophia in Thessaloniki until 1430 and recorded textually thanks to the efforts of its bishop, Symeon of Thessaloniki (1416/17–1429).'* (Pentcheva, 2016, p. 5)

ordination; soloist's chants (*kondakaria*), and choral chants (*asmatika*); the Liturgy of the Hours called by Strunk (1977, p. 117), 'the singing of praises seven times a day' or *ekkēsiastēs*, known in scholarship today as the *asmatikē akolouthia*; the liturgical year with its calendar of fixed and moveable feasts; and a variety of lesser rituals (*akolouthiai*) of church consecration, blessings, exorcism, and monastic investiture. Their forms evolved to include recitation, hymns and psalms, which were sung or chanted.

After the second iconoclasm ended in 842 AD, Parenti (2011) argues that the laity declined in their religious duty of the public recitation of the daily Liturgy of the Hours and the singing of psalms, and this became increasingly a responsibility upheld by the monastic orders. Changes in the form of the liturgies (*typika*) reflect this, developing more personal, ascetic, and introspective forms, while at the same time the older 'Cathedral liturgies', known as *ekklisiastis typos*, continued on more public occasions.[52] Marinis, a Byzantine scholar trained as an architect, citing Taft's research, summarizes,

> .... five phases in the development of the Byzantine rite: 1) the paleo-Byzantine period up to 330, about which there is little information; 2) the Imperial period, which lasted until the beginning of the thirteenth century; 3) the Transitional period, from the beginning of the seventh century to ca. 850; 4) the Stoudite synthesis, from ca. 800 to 1204; 5) and the ensuing neo-Sabaitic synthesis, which began after 1261. (Marinis, 2014, p. 10)

It is within the Transitional period that Hagia Sophia, Thessaloniki was constructed. The Eucharist liturgy in Hagia Sophia was influenced by Constantinople but not identical. The studite monk Gregory Palamas (c. 1296 – 1359) who was archibishop of Thessaloniki from 1350 - 1359, sought to integrate his Hesychast tradition into the life of the metropolitan Christian, but not to replace their existing liturgies or traditions. According to the writings of Archbishop Symeon of Thessaloniki (c. 1381/7 - 1429) the cathedral continued to celebrate the liturgical form of the *ekklisiastis typos*.[53] He states that 'the chanted office was sung throughout, as opposed to the monastic office, which was often performed

52. Parenti concludes that during the tenth century liturgical books begin to record the reform initiated after iconoclasm. Two typoi existed in Constantinople, one from the cathedral called the ekklisiastis typos, and another from 'other churches' and monasteries called hagiopolites. *'In Constantinople, the celebration of the ekklisiastis typos was increasingly reserved for the more solemn moments of the liturgical year, and the important feast days. Even in cases of celebrations according to the ekklisiastis typos, psalms and stichirà were added from the hagiopolite typos'* according to Parenti (2011, p. 465).

53. In ***The Byzantine Office at Hagia Sophia***, Strunk (1977, pp. 112-116) examines the *ekklisiastis typos* in the Great Church of Hagia Sophia in Constantinople, *'called the (ἀκολουθία ϱσματική) - the "chanted" or "choral" office'*, in relation with that of Hagia Sophia Thessaloniki,. However, his primary source is a manuscript (called MS Athens 2061) *'concerned with the chanted office only'*, which was wriiten in Thessaloniki. He deduces that it refers to the 'ordinarium' of Hagia Sophia in Thessaloniki.

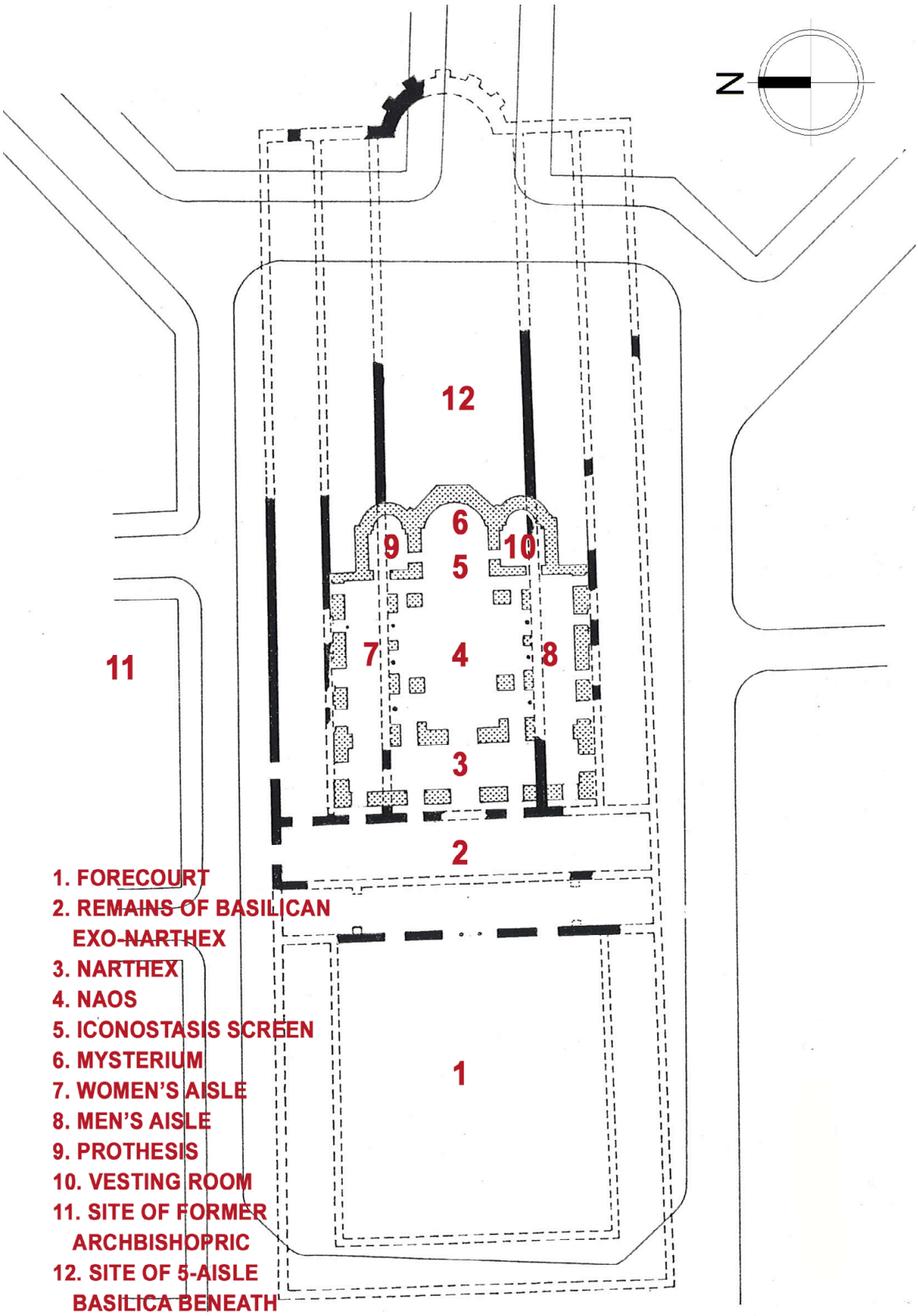


FIG. 8 Above: Plan of Hagia Sophia showing the traces of the forner 5-aisle basilica with its west-facing foreourt and exo-narthex.

Source: Theoharidou (1994, p. 35), additions by author.

without singing at all' (Strunk, 1977, p. 130). Symeon wrote that the *asmatiki akolouthia* was followed only three times a year in Constantinople, whereas it in the 'great church in Thessalonica, the second Hagia Sophia, the ancient rites of Constantinople had found their last haven' (Strunk, 1977, p. 113). Baldovin (1987, p. 257) writes that,

> 'Christianity, therefore, represented the public religious life of the city by means of its cult. It made the *civitas* not only civilization, but also a holy civilization, a civilization defended as much by icons and relics and processions as it was by walls and military and political power. Thus, the city as holy civilization was a concept that was expressed above all liturgically.'

The many pages of prayers, and liturgies with their diverse stational locations in the city, related to each other in their monthly timings throughout the year, and the holy persons and events that they celebrate, are recorded in Symeon of Thessaloniki's Liturgical Commentaries.[54] These can leave us in no doubt that Hagia Sophia was the centre from which the network of stational holy places, the seasons, and the people, all functioned together as one whole to make the city of Thessaloniki a holy one.

3.5 Hagia Sophia, Thessaloniki today and the liturgical space in action.

In Hagia Sophia today, as in most of the Eastern Orthodox churches, the liturgy of St. John Chrysostom (349-407 AD) is now celebrated for the daily Eucharist. This liturgy is thought to have evolved until the mid-eighth century, when Hagia Sophia, Thessaloniki was constructed.[55] Though the manner in which it is celebrated today is not processional, it does hail from very early use in Hagia Sophia, Constantinople from where it became commonplace in churches of the 7th-8th century, when Hagia Sophia, Thessaloniki was built.

The sequential stages of the Eucharist liturgy in which the synaxis participate today can be linked to the parts of the existing church (see Fig. 8).[56] Archi-

54. The complete compilation is brought to us by his editor J. Phountoulès: See Symeon, St. (1968) ***Symeon, Archbishop of Thessaloniki: The Liturgical Commentaries****/Ta Leitourgika Syngrammata [Συμεών αρχιεπισκόπου Θεσσαλονίκης τὰ λειτουργικὰ συγγράμματα.]* Phountoulès, J. ed. Thessaloniki

55. The liturgy of St. Basil the Great (4th century with 5th century additions) is used for feast days, and the liturgy of the pre-sanctified gifts (Greek) on certain days during Lent. The Syriac liturgy of St. James (4th century) is used in the Assyrian Orthodox church and in India. St. John Chrysostom was known for his eloquence. He spent twelve years ordained in the Golden Church of Antioch, his home town, and then six tumultuous years as the Patriarch in Constantinople.

56. In a Byzantine church a two-dimensional plan of functional relationships will only yield a superficial understanding of its symbolism. The liturgy should be understood as three-dimensional, with horizontal, spiral, and vertical movements, as Dionysios explains in the Ecclesiastical Hierarchy. The symbolic meanings of its hierarchy of spaces become a holistic experience for the synaxis.



FIG. 9 Above: Forecourt and west facade of Hagia Sophia showing the entrances, which were originally five doors into the narthex, followed by five arches into the naos within. Photo by author.



FIG. 10 Left: The central door to the narthex today, originally reserved for ritual entrances and processionals. The people entered through the doors to left and right, north and south.

FIG.11 Right: Hagia Sophia's north wall. The blocked door was possibly the archbishop's private door to the upper gallery from his residence. Photos by author.





FIG.12 Below: Mosaic above narthex entrance of San Marco, Venice, a domed basilica. Of the 5 west doors; the bishop uses the central door and Christ above him. The people use the others, including to the north and south of the narthex. Available from: https://en.wikipedia.org/wiki/St_Mark%27s_Basilica [Accessed: 22 July, 2020]

tecture may use a different mode of expression to that of liturgy, but like all Byzantine arts it sought to 'circumscribe the incorporeal' and bring a tangible expression to its theology.[57] 'Architecture does not simply house ritual acts; it interacts with them, glorifies them, and magnifies them', according to Ousterhout (1999, p. 13). All the practices of the Byzantine Christians sought to bring the human mind to accept unity within diverse multiplicity and touch God dwelling in the world through the human person.

The following identifies the essential parts of the church which the participant can experience analogously to the liturgy's mystagogic and anagogic steps today (see Fig. 4). These are linked to the distinctive forms and features of the transitional churches described in the Chapter 2 (pp. 80-82).

1. One approaches the church from one of the streets that converge on it (see Figs. 6, 7). From the south one may pass the archaeological site of the Roman nymphaeum, where the underground spring of sacred water is still running.[58] The experience of the early processional liturgies may have passed parts of the exterior walls of the former basilica.[59] They were probably more prominent when the cross-domed church was built, though embedded into the fabric of the city.[60] The whole enclosure of the basilica was retained as consecrated space. Today the north and south walls' repetitive windows tell us of the aisles and galleries within, and the trace of the basilica is strong in the boundaries of the site and the forecourt, giving the whole complex a strong directional axis.[61]
2. The eye is greeted by the present church - a mountain of stone, earth-lime, and terracotta brick.[62] A dome broadcasts the centre of the building.

57. '*The Hesychast is one who aspires to circumscribe the incorporeal in a dwelling of flesh ...*' Meyendorff (1974, p.36) translates more eloquently Step 27: 6 of St. John Climacus' '*Ladder of Paradise*' than other translators. However, I also cite from the full translation of Archimandrite Lazarus Moore, *'A solitary is he who strives to confine his incorporeal being within his bodily house, paradoxical as this is.'* (Moore 1959, p. 237)

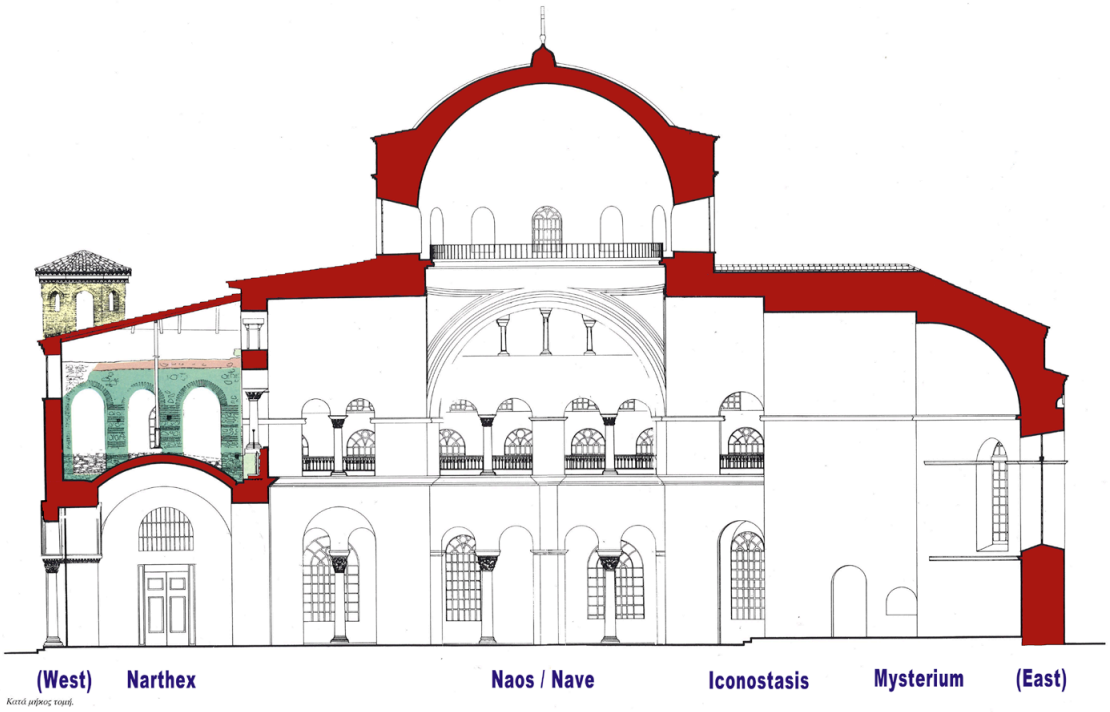
58. Now at the entrance to the recent undergound crypt-church of St. John the Baptist.

59. See Baldovin (1981, p. 241 ff.) for the *'influence of the stational liturgies'* on the *'development of the structure of the entrance rite of the eucharist'*.

60. In general, the Byzantine city was densely constructed and buildings would have pressed upon the walls of the basilica. Between the basilica's outer wall and the church the remains of Byzantine structures post-dating the church have been found - along the north wall and also the south one. See Theoharidou (1988, pp.13-15) on the Byzantine structures post-dating the church along the north wall. It is thought that these structures may have been chapels connecting to the church, and that the mysterious blocked door in Fig. 11 may have given access to the archbishopric to the north.

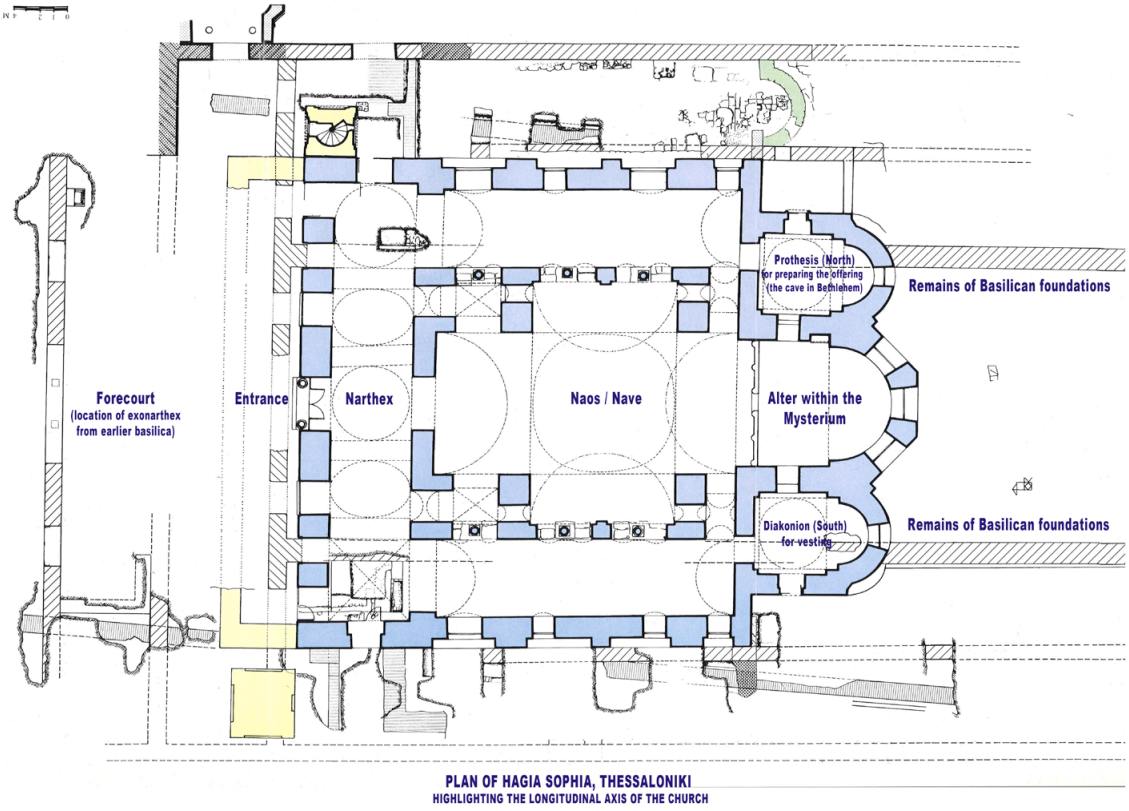
61. On the north and south walls are many smaller putlog holes, partly filled in, used for scaffolding, and a horizontal series of large ones that may indicate a roofed colonnade between the new church's walls and the basilican walls (see Fig. 11).

62. By 'earth-lime' is meant the admixtures of lime (not necessarily hydraulic) with 'burnt clay'



Fig, 13 Above: Long Section showing the sequence of spaces along the horizontal axis. Also marked are the three major cornice levels, distinguishing the ground floor, the upper gallery, and the dome. Source: Theoharidou (1994), additions by author.

Fig, 14 Below: Plan showing in more detail the sequence of spaces within the church. St. John Chrysostom liturgy compared with the relevant part of the church.
Source: Theoharidou (1994), additions by author.



Layers of white stone and red brick bands, step upwards and backwards into craggy-looking areas higher up around the vaults and apses, suggesting that this building could be climbed, either physically or in the imagination.Above these is the cuboid platform at the base of the dome, which sweeps up in a curve to the apex where a cross marks the centre.

3. The forecourt of the former 5-aisle basilica is still used by the public as a plaza (*plateia*) through which to walk up to the church's main entrance. Though it is the church's private property, it is often full of people meeting, sitting and talking, children playing and other activities related to the life of the city but not directly to the church (see Fig. 9). It still works as the zone between sacred and profane described by Symeon of Thessaloniki, its former archbishop, as 'what is on earth' (see Fig. 24). According to Feist (2019, table 71) certain views of the church may have been built into the approach through the old basilican forecourt.[63]

4. The ruined remains of the original exo-narthex can be seen as low walls in the paving, though there is no replacement exo-narthex today.[64]

5. Today, one enters through the thick masonry walls into the eso-narthex by the central door. Formerly the central door (called the 'beautiful gate') was reserved only for the those performing the divine rite, and the people entered to the right and left.[65] There were originally five arched doors into the narthex from the west.[66] Today there are three doors and two windows in place of two doors. In addition, two more windows exist over relieving arches spanning over the old basilican foundations (see Fig. 9). To the north and south of the narthex two more doors are opened only on important feast days.

6. Inside the narthex there are five bays covered by five small domes.[67] Three arched openings lead into the nave (*naos*) under the dome, and the barrel-vaulted side aisles.[68] The furthest to the right enters the vaulted aisle on the men's side of the naos, and the furthest left enters the vaulted aisle on the

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products such as brick dust (for its pozzolanic and hydraulic properties) and crushed brick pieces, used as mortar using throughout the building (see Chapter 5).

63. See Chapter 2 (Fig. 3, p. 74) of this thesis

64. The basilican exo-narthex would have been wider than the present church and would have connected through to the outer aisles of the old basilica. The Ottomans used an eywan - arcade in its place, whose foundation walls are visible in line with the present church's foundations. It was demolished during archaeological works after its re-consecration as a church.

65. See Fig. 12. Mosaic above entrance to San Marco, Venice, depicting its entrances in action.

66. Five doors in the west are a feature of Hagia Eirene and Hagia Sophia in Constantinople, of St. John of Ephesos, the church at Dereagzi, and are generally a distinctive feature of the Transitional churches.

67. These are 3 sail vaults, 1 pendentive dome, and 1 cross vault.

68. Two of these lead to small chapels created within the massive 'perforated' piers.



FIG. 15 Left: View of the naos towards the altar. On the right is the Bishop's synthronon and on the left (just beyond the frame) is the ambo, opposite.

The space of the church combines: The horizontal axis (of procession and return) from the 'beautiful door' of the narthex to the holy door leading to the altar at its centre; and the vertical axis (Dionysios' ascent and descent) with three cornice levels, from earth at the omphalos to the heavens of the golden dome. The vertical axis is reiterated in the dome mosaic by the axis between Christ in the centre and the Holy Mother below. The four massive perforated piers around the naos are reiterated by the four archangels around them. According to Patricios, 'Earth and Heaven are united by the semi-dome of the apse which contains an image of the Theotokos holding the child Jesus [usually] escorted by two archangels [here they are in the dome above]. She is the one who unites the upper world of heaven and the lower level of the earth by means of the divine child in her arms.' (Patricios, 2014, p. 401)

Photo by author.

women's side of the naos (see Fig. 8).[69] The central archway from the narthex into the naos leads to the processional axis towards the altar, the same east-west axis which the processions took when the basilica was in use (see Figs. 21, 22). The central arch, equivalent in position to Hagia Sophia Constantinople's 'beautiful doors' (ὡραῖα πύλαι), is the one through which Symeon of Thessaloniki describes the entrance of the archbishop and all those performing the divine liturgy.

7. After lighting a candle and kissing the icons (making reverence, or *proskynesis*) one may go into the *naos* and take a seat or stand (see Figs. 16, 17).

8. Above the cubic space of the *naos* is the dome on four pendentives whose feet taper to nothingness making it seem to float. High up in its centre is the mosaic of Christ in ascension (*analipsis*) being borne aloft into the centre of concentric rings of light (see Fig. 15). He is surrounded by the twelve apostles, four archangels, and Mary. Light enters the darkened space from a ring of twelve windows below the dome and, depending on the season and time of day, the sun may spotlight a part of the interior space.

9. The assembly (congregation) faces east towards the *Iconostasion* or *Templon* which veils the *mysterium* (sanctuary) where the altar lies beneath a large apse. There are five arches but three doors in its wooden frame, fitted with the icons of Christ and John the Baptist to one side, and the Holy Mother and saints to the other. Above this is a cornice which supports a further series of icons of the apostles, with the Last Supper in the centre. If the liturgy has not started one may also go up the steps to kiss the icons. (see Fig. 15).

10. The sanctary is tripartite, like three caves, composed of the central apse and smaller ones either side. The chamber to the north contains the altar of the *proskomide* and to the south, the chapel of the Virgin's parents.[70]

11. The curtain of the central archway in the iconostasis, the holy doors

69. According to Baldovin (1987) in Hagia Sophia, Constantinople, 'The north gallery seems to have been reserved for women from the fourth to the ninth century' (p. 176) ... and 'Women were to the left (north) and men were to the right (south).' (p.177). Theoharidou (1988) cites evidence that in Thessaloniki the women were given the north aisle (presumably in addition to the gallery?) 'at least from the end of the seventh century onwards' (p. 95). In Procopius' description of Hagia Sophia Constantinople (532-37), the assembled men and women of the synaxis were divided to the right and left in the vaulted side galleries, *'There are two colonnades (stoai) one on each side, not separated from the church by any structural element, but actually adding to the measure of its width and extending to its whole length, while their height is less than that of the building. They, too, have a vaulted ceiling (orophe tholos) adorned with gold. One of these colonnades is assigned to men for their devotions, while the other is used by women for the same purpose. However, there is no difference or any distinction between the two, but their very equality and similarity contribute to the beauty and adornment of the church.'* (Procopius *De Aedificiis*, 1, i, 23 ff. In: Mango, 1972, p.74)

70. The chapel of Joachim and Anna would have been formerly the vesting room or diaconion.



FIG. 16 Above: Candles in the narthex, at the end of the vaulted side aisles, lit with prayers. Note: Doors and windows symbolised the enlightened saints, bishops and theologians through whom the light shines (see Sougitha, v.15, in Appendix B). Hence the doors here are decorated as if draped in their robes. Candles recall their souls.

Photo by author.



FIG. 17 Left: Beyond the candles, the vaulted side aisles and the naos (within the four columns with 'wind-swept' capitals) await the assembly.

Photo by author.

(ἅγιαι πύλαι, ἅγια θύρια), is drawn open.[71] Through them, within the area to the east beneath the apse, known as the *mysterium* (sanctuary), one can see the altar table (bema) illuminated by three windows behind it. Above the altar table is an icon of the crucifixion, and above it on the vaulted ceiling there is a geometric, aniconic mosaic of a cross with light beams in a circular mandorla.

12. In the apse above the altar is a large mosaic of the enthroned *Theotokos* (God-bearer) with the standing Christ child before her chest, representing the incarnation, and seeming to float in a gold background (see Fig. 29). Her gaze meets the eyes of all those who are within the *naos*.

13. Looking up around three sides, one can see the upper galleries which are not used today, through which subdued light enters the *naos*. The gold of all the mosaics glimmers and shines in the low light of the dark, cool interior which is otherwise barely lit by a mixture of some votive candles, and a couple of electric candelabra. The large chandeliers hanging from the centre of the dome will light up in the liturgy (see Fig. 21).

14. Within the nave, seeming to float on the marble floor, are two ornately carved pieces of liturgical furniture; on the left side is the ambo from which the gospel will be read, and on the right is the Bishop's sythronon. Both light and sound are reflected by the polished marble floor in whose centre is the coloured marble design of the *omphalos*.

In the next part of this chapter, certain liturgical stages will be compared by analogy to the masonry architecture and to the masons' experiences at the end of the chapter. Due to the great magnitude of the subject, it is only possible to describe limited spects of translation between liturgy and masonry building, in which the humble fieldwork experience of the author's masonry-bound eyes, is supported by the texts of Maximos the Confessor, Archbishop Symeon of Thessaloniki, and their learned contemporary commentators and translators. As far as possible, the liturgical experience in the space of the church is compared with the historical descriptions of Archbishop Symeon. Inevitably some areas will be overlooked over in order to focus on experiences that are relevent to the masonry architecture to be discussed in Chapter 5.

3.6 The Main Sections of the Liturgy experienced today in the church

The Eucharist liturgy as it is celebrated today combines two litanies, with two processional entrances, as one ritual called the *Synaxis*. The 'Litany of the Cat-

71. See also Baldovin (1987, p.176) for the definition of the Beautful doors (Royal doors in Hagia Sophia, Constantinople) between the narthex and naos, and the Holy doors between the naos and the mysterium.

echumens' brings the gospel to the altar, and consists of the basic tenets of the faith, psalms and prayers, and readings from the Gospels. The 'Liturgy of the Faithful' brings the Eucharistic gifts of bread and wine to the altar and includes the sacrificial offering, communion, the holy spirit, and giving thanks. If one considers the earliest known liturgies, in the 3rd century apostolic tradition of Hippolytus and the Syriac SS. Addai and Mari, one can already see these concepts combined into one mystagogic cycle.[72]

The liturgist and Palamite archbishop, St. Symeon of Thessaloniki (c. 1381/7–1429), who refers to his own metropolitan cathedral of Hagia Sophia as an example, writes in his Explanation of the Divine Temple (Ἑρμηνεία περὶ τοῦ θείου ναοὺ) 'as handed down by the saviour Himself, by the apostles and by the fathers, so also we perform the sacred service.' (Symeon (2011, v.11, p. 87) [73] The liturgy's 'order of the mystagogy' can be compared with the method explained by Dionysios in his *Mystagogia* and *Ecclesiatical Heirarchy*.[74] It moves between a symbolic theology which is affirmative (cataphatic) and abstraction or negation (apophatic). It is a method of cognition that comprises the 'like' and 'not-like' of analogy. This dialectic going back and forth through analogy becomes a process of purification and ascent, until the initiate is able to integrate the divine unity, as Dionysios (1897) writes, 'not dead, but as having passed from death to a most divine life' (EH, p. 212) and 'knowing above mind' (MT, p. 90).

4.6.1 The Litany of the Catechumens and first Entrance; relationship between Narthex and Naos

'Every holy rite begins with the doxology: "Blessed is the Kingdom of the Father and of the Son and of the Holy Spirit." Intercourse with God consists of thanksgiving, doxology, confession, and petition', as Cabasilas (1977, p. 43) explains. The Litany of the Catechumens begins with a prayer for peace.

Three Antiphons follow alternating with *ektenes* (pleadings). These supplications insistently knock on the door of the Lord's kingdom, described in the first

72. For the text of the Liturgy according to the tradition of Hipploytus see Fig. 2. For the full text of the three earliest known liturgies, including SS. Addai and Mari, see Dix (1945, pp. 156-187),

73. He explains, *'The successor of the apostles, the sacred Dionysios, testifies to this, teaching that the sacred-service be done as we do. The God-inspired Basil and Chrysostom, having set forth the order of the mystagogy more fully, have handed down that it should be carried out as our church does. Their prayers for the sacred-service bear witness, expounding on the first and second entrances and the rest of the rite.'* (Symeon, 2011, p. 87)

74. See Louth (1981, p. 161). It is also seen by some as anagogic: 'The Holy Liturgy does not guide us from the start straight to the (great) Mystery, but progresses (in stages) like a ladder. That is, through pre-induction prayers and holy actions it guides us from what is most well known and familiar to the highest and most mystic (experience), until the point where it unites us with the Lord through Holy Communion.' (Papakosta,1950, p.32)

of Antiphon as an expression of his ultimate power and mercy,[75]

> Lord, our God, whose might is beyond compare and whose glory is beyond understanding, whose mercy is without measure and whose love for mankind beyond all telling, look upon us and upon this holy house, Master, according to your loving kindness, and bestow on us and on those who pray with us your acts of rich mercy and compassion.[76] (Chrysostom 2011, p. 21) .

In content, this part of the liturgy is more or less equivalent to the first three or four sections of the pre-Nicene liturgies.[77] It affirms God's unity, munificence, and compassion in the midst of disasters, and pleads for entrance into it; the entrance that follows will be that of Christ which today is represented by the Gospel and the Bishop (Priest or Hierarch), but in the early days of processional liturgy it was also the entrance of the people into the church. [78] In the early centuries, this litany was like the vestibule (narthex) through which those who had not yet taken on the Christian path, the 'uninitiated' (ἀμυήτοι), as Dionysios calls them, would enter the religion. They were not yet practicing the methods of Christianity, but were permitted to hear its essential theology and the Holy Gospel's prophetic stories as its outer symbols.

Archbishop Symeon of Thessaloniki has recorded how the antiphons for 'Orthros' (Lauds) and 'Hesperinos' (Vespers) were sung in his time with choirs and deacons which 'offers an exact parallel to the preliminary antiphons of the Liturgy.' (Strunk, 1977, p. 135).[79] Symeon writes 'They divide these in three, honoring the Trinity ... and to the ancients they announce the incarnation of the Word of God.' The Entrance into the *naos* by the Bishop (*hierarch*) is made while

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75. . Cabasilas (1977, p. 26) writes in his commentary that the liturgy is to, *'enkindle in us a love for him...'*

76. Except where otherwise noted, translations are from St. John Chrysostom (2011) *The Divine Liturgy, of our father among the saints, John Chrysostom,* Translated by Archimandrite Ephrem Lash, Chipping Norton: Nigel Lynn Publishing, of behalf of The Greek Archdiocese of Thyateira and Great Britain. *'Κύριε ὁ Θεὸς ἡμῶν, οὗ τὸ κράτος ἀνείκαστον καὶ ἡ δόξα ἀκατάληπτος, οὗ τὸ ἔλεος ἀμέτρητον καὶ ἡ φιλανθρωπία ἄφατος· αὐτός, Δέσποτα, κατὰ τὴν εὐσπλαγχνίαν σου, ἐπίβλεψον ἐφ' ἡμᾶς καὶ ἐπὶ τὸν ἅγιον οἶκον τοῦτον, καὶ ποίησον μεθ' ἡμῶν καὶ τῶν συνευχομένων ἡμῖν πλούσια τὰ ἐλέη σου καὶ τοὺς οἰκτιρμούς σου.'* (Papakosta 1950, pp. 40-42)

77. See Table 1 in the Appendix.

78. According to Baldovin (1987, p 217) *'the three antiphon office, had a rogational or supplicatory character. It was used on days which commemorated civil disasters or events that were crudcial to the existence of the city. One sign of the rogational character of these services is the use of the ektene or insistent litany..'* He also mentions (p. 216) that Patriach Germanos considered them *'like prophecies of the coming of Christ, whereas the entrance with the Gospel is itself a symbol of the Incarnation.'*

79. In Symeon's time, these were sung in full since 'originally, the antiphons in the stational liturgies did not just include lines from Psalms but lengthy series of whole psalms were sung by the choir with the response from the people being a single line or part thereof.' (Strunk, 1977, p.122)



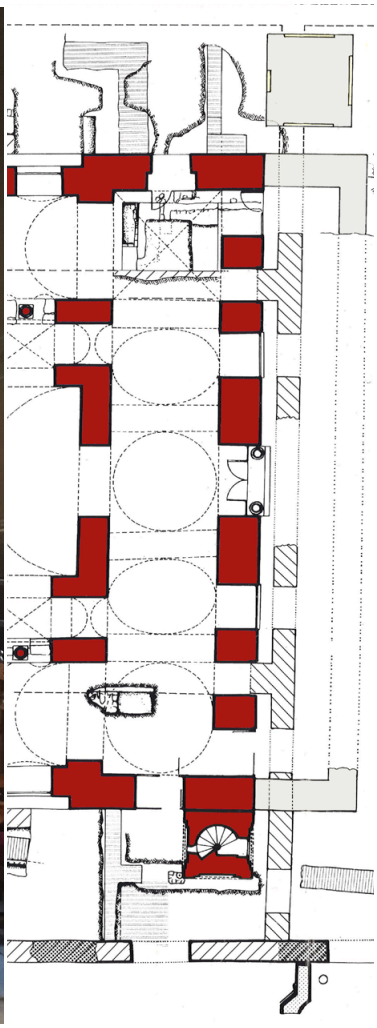




FIG. 18 Above right: Detail of the narthex in plan. Source: Theoharidou (1994), additions by author.

FIG. 19 Above left: The narthex during the liturgy. To this day, the Orthodox liturgy involves a great deal of moving about, where the congregation frequently stand throughout, and move freely in and out of the church and narthex, lighting candles and kissing icons, greeting each other, while the priests move back and forth from the inner sanctuary to the nave, around the nave, and sometimes around the church exterior (actions called 'dromena') as an expression of the liturgical concepts. Photo by author.

FIG. 20 Left: Parable of the ten virgins, the five wise virgins enter the walled enclosure and are with the bridegroom; The five foolish virgins cannot enter. fresco in the Serbian Orthodox monastery of Deccani, Serbia (Kosovo).

Available from: https://iconreader.files.wordpress.com/2013/04/tues_14c_highdecani.jpg [Accessed: 27 February, 2019]

the third antiphon 'is being sung, the Gospels are brought in: the holy book is carried in by the deacon'. (Casabilas, p. 51). According to Matthews (1995, p. 79),

> What in the Byzantine rite is called the lesser entrance was in origin the ceremony of the bishops' entrance into the church where he was to celebrate the liturgy, a ceremony common to the entire orient.

Mainstone (1988, p. 227) tells us that the higher in sacred authority always led in the Eastern church.[80] Therefore the hierarch headed the procession, 'but he would have been preceded by a deacon carrying the Gospel, since this was seen as representing Christ'.[81]

In the spirit of the earliest liturgies, here God is acknowledged coming down to earth 'who didst send from heaven into the Virgin's womb, and Who concieved within her was made flesh',[82] Symeon's emphasis is on the Bishop representing Christ at the entrance into the church.

> 'The hierarch, then, who is about to do the sacred service, descends from the throne where he was, representing the descent of God the Word to us. Putting on the sacred vesture, he signifies His all-holy incarnation. Descending as far as the gates of the temple, he represents His appearance and manifestation on earth, and also His descent to death and to the underworld; for going to the west and to the gates represents this.' (Symeon, 2011, p. 113)

Here we see Symeon map out the areas of the church as an iconic *chora*, painting it with analogous qualities; the 'descent', the gate, the west where the sun sets (the narthex).[83] The Bishop (*hierarch*) has waited outside the *naos* until the moment of the Entrance. Symeon continues, 'The priests say the prayers inside, typifying the heavenly orders' (ibid. p. 113).

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80. Mainstone's describes this entrance into Hagia Sophia in Constantinople, in the old processional rite, *'On major feasts the whole congregation would have come in procession with the clergy from another church. They would then have entered with the clergy, probably flooding through the doors of the narthex as the clergy (and the emperor and his court if present) entered through the central door or doors.'*

81.The order of persons was the same in Symeon's time, *'candles go before, the deacons precede in pairs, and the sacred Gospel is carried, the bishop himself is supported by deacons on each side, and the other priests follow behind'* (Symeon, 2011, p.115).

82. Liturgy of Hippolytus, see Fig. 2, Table 1.

83. The most unusual observance mentioned by Symeon is certainly the bishop's *'descent to the West,' i.e. to the western doors of the church after vesting and before the opening blessing. ... it is clear that this is a vestige of the early Byzantine practice in which everyone, clergy and laity, entered the church building at the same time; the bishop remained at the door until the beginning of the Little Entrance. The first part of the Byzantine Divine Liturgy proper is the enarxis. From his place just inside the western door of the church, the bishop, according to Symeon, gives the signal to the deacon, who calls on the priest in the sanctuary to give the opening blessing. After the blessing, the deacon intones an opening litany, followed by psalm compositions, the three antiphons. As the antipons are concluding, the bishop(s), the priests, and the deacons all process forward to the central holy doors and make the Little Entrance.'* (Hawkes-Teeples, 2011, p. 27)



FIG. 21 Top left: View into the naos from the central door (beautiful gate) from the narthex, along the ancient axis to the altar in the sanctuary apse. The position of the red carpet, rolled out for the liturgy, corresponds to the 'solea' of basilican churches.

Photo by author.

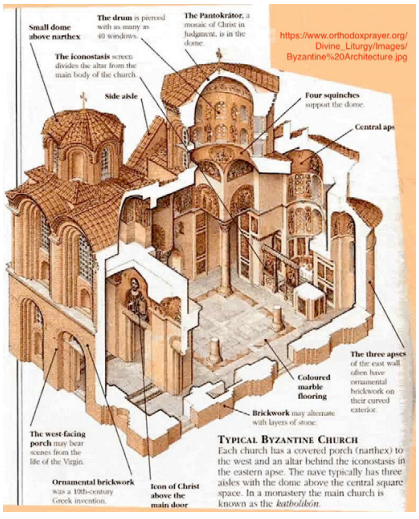
FIG. 22 Bottom left: Looking back at the Central door (Beautiful gate) from the naos. The exterior light is coming through the central entrance door into the narthex. Today, this door has no tympanum in Hagia Sophia, leaving open the question of whether there was one in former times.

Photo by author.



FIG. 23 Below: The axonometic is not of Hagia Sophia, but of Panaghia Chalkeon of a much later date, although thought tby Velenis o be inspired by Hagia Sophia. Its purpose here is to show the usual placement of the icon of Christ on the tympanum of the central door (Beautiful gate) between the narthex and naos.

Accessed from https://orthodoxprayer.org/Divine_Liturgy/Images/Byzantine%20Architecture.jpg



The symbolic zones of the church according to Symeon and Maximos the Confessor, who was a great inspiration to him, are sketched in Fig. 24 showing the narthex as the earthly realm, the nave as heavenly, and the mysterium as 'beyond heaven'.[84] The latter, writing a hundred years or less before Hagia Sophia was constructed, explains in exactly the same way,

> … the first entrance of the Bishop into the holy Church for the sacred synaxis is a figure and image of the first appearance in the flesh of Jesus Christ son of God and our Savior in this world. (Maximos 1985, p.198)

Today, the antiphons are sung within the church by two groups of cantors and deacons (see Fig. 29). They are ideally placed for the 'broad' arch to reflect their voices back and forth.[85] Therefore, the *ekklisia* was considered an iconic space at the time of construction, and members of the *synaxis* had access to its *sacred topos*.[86] One can say it is the space of Isar's liturgical *chorography*.[87]

These eucharistic prayers concisely relate a hierarchy of creation, from God, through his angels and archangels, down to a secure earthly foundation. They set forth a vision of entering into a secure and sanctified world throughout the historical turmoil of the early centuries of Christianity. The person of the priest or bishop carries this weighty symbolism as a link in the chain of authority and sanctity that Christianity derived through Jesus.[88] Throughout the liturgy Christ is always acknowledged as the highest authority, as a living presence within the space of the church, through sacraments, people, and architecture.[89]

Mainstone (1988, p. 229) writes of the reverence for the Gospel book as the

84. In Maximos' terminology there are two zones, the material and the immaterial, corresponding to Christ's earthly and divine nature.

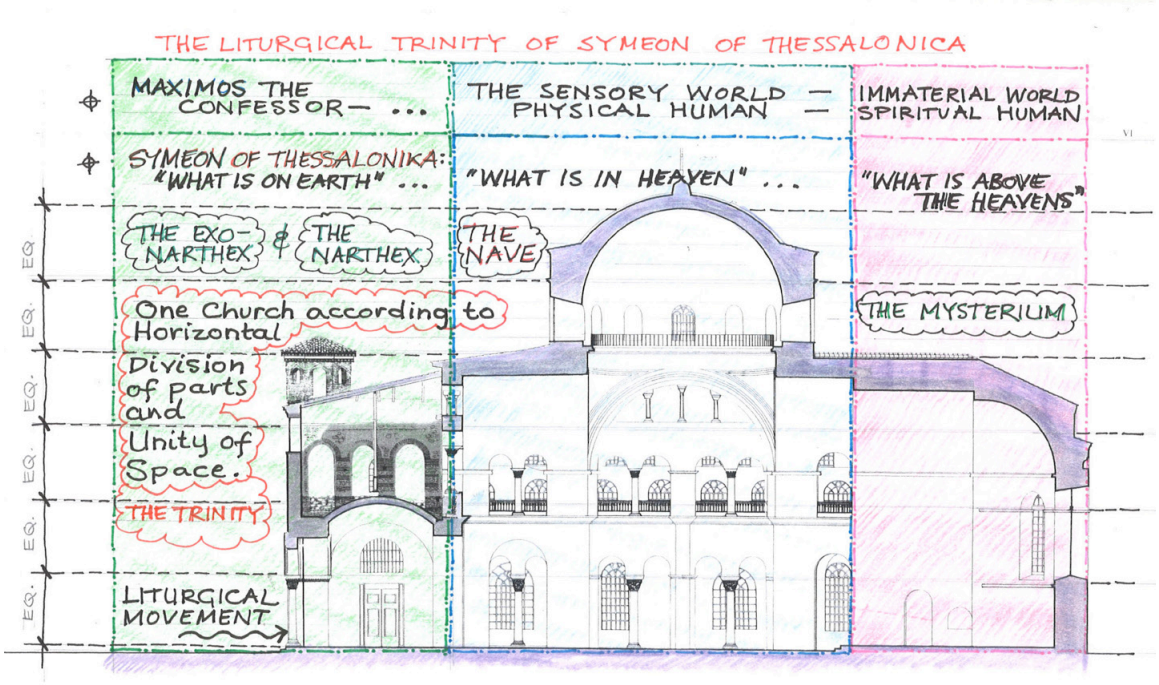
85. Kakalis (2020, p. 26) writes of *'the dialogue of the two choirs'* within an Athonite Katholikon of *'cruciform, triconchal, general plan' and 'concave walls'*, describing what he calls, *'the soundscape of the church'.* He writes that, *'the two choruses of Gregoriou monastery enhance the dynamics of the intermediate zone between the nave and the chancel'*, (ibid. p.26)

86. The principle of apostolic succession is still retained in his ritual role as *hierarch*.

87. *'The Heavenly liturgy is the prototype of the Earthly liturgy, in which humans could and should join the angelic performance, in which the liturgical hymns are "revealed in a holy manner", and humans can partake into the great cosmic craze in which the whole of creation takes part: "Those in heaven and those on earth form a single festal assembly; there is a shared thanksgiving… one single choir"* (Chrys. PG 56, col. 97)'. (Isar, 2004, p. 78)

88. The chain of succession was the commonly accepted authority of a mystagogue and teacher, leading an initiant on a path of learning, and was not limited to the apostolic succession. It was formerly known in the Greco-Roman world as the authority of the philosopher from before Pythagoras (6th century BC) to Proclus (5th century AD). According to Uzdavinys (2004, p. 298) *'Plato himself was merely a link (albeit crucial) in the Golden Chain of the Pythagorean, Orphic and different Oriental traditions.'*

89. In other words, the Gospel book, the Holy Gifts of communion bread and wine; the hierarch, bishop, archbishop, priest; and the building itself in its distribution of parts according to Maximos' *Mystagogia*.



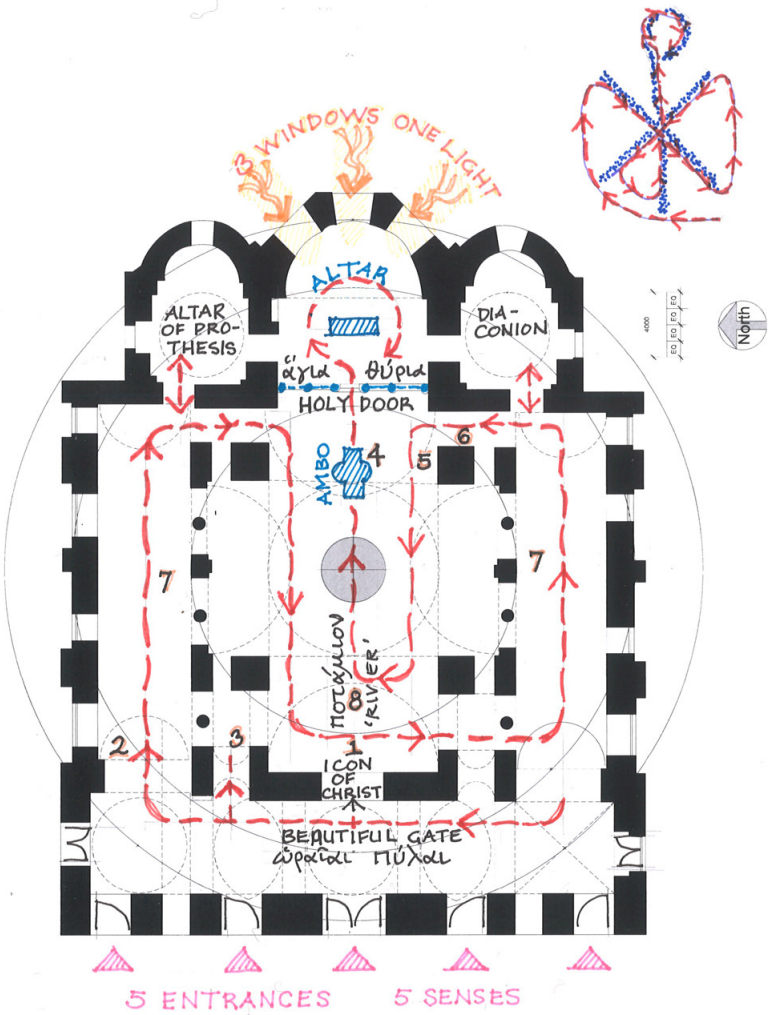


FIG. 24 Above: Horizontal divisions of the church according to Archbishop Symeon of Thessaloniki and Maximos the Confessor.

The divisions, and thus the zones of transition, are made at the door from the narthex to naos (beautiful gate), and the door through the iconostasis (holy door).

Annotations by author, on Section by Theoharidou (1994)

FIG. 25 Below Left: The liturgical route (In: Darrouzes, 1976, p. 65) taken by Symeon of Thessaloniki upon the entrance of the Bishop to the church. The movement of the celebrants through the whole church, must have allowed those in the aisles and narthex an important sight and contact with the Gospel and the Divine Gfts.

Redrawn with annotations by author.

presence of Christ, and he quotes Paul the Silentiary describing Hagia Sophia in Constantinople, 'Here the priest who brings the Gospel passes on his return from the ambo, holding up the golden book, and as the crowd surges forward in honour of the immaculate God to touch the sacred book with their lips and hands, countless moving waves of people break around.'

The processional made maximum use of the space of Hagia Sophia, Constantinople, so that the majority of people could participate. Symeon compares the rite of entrance at vespers in the Great Church and in Hagia Sophia in Thessaloniki, which Darrouzes (1976. p. 65) has analysed with a map. He shows the stational route that Archbishop Symeon and his entourage would have taken within the church, pausing to offer *proskynesis* towards the icon of Christ over the narthex entrance (see Figs. 22, 23).[90] Moving onwards, they then offered respect to the saint whose day it was at their icon.[91] Their winding movement through both of the side aisles and back through the *naos*, acknowledging the seen and unseen in the chora of the church, at last took the central axis to the altar (see Fig. 25).[92] Today, the route for bringing the Gospel books to the altar is simplified, but continues the intent of the former one.[93] The ritual entrances are enacted through the zone of the iconostasis and walling which distinguishes the nave from the three apses. The deacon comes out from the door of the north apse with the Gospel book and with novices or other deacons carrying candles and incense. They process through the north aisle and along the long axis of the

90. French Orthodox theologian Olivier Clement (1921-2009), wrote in Contacts journal (1960) that, *'The veneration of icons is thus an essential aspect of the liturgical experience ... lived by the whole being of man; it has the immediate character of sensation; it is a "sensation of divine things" realized by the total man.'* [Available in English translation from: https://www.thepostil.com/on-the-theology-of-the-icon/]

91. Darrouzes (1976. p. 68) describes the *'beautiful doors'* as the ones entering from the narthex into the nave and he locates them at the central archway in his diagramme (p. 65). To be exact, Symeon's text describes the *'beautiful doors' (ὡραῖα πύλαι)*, for Hagia Sophia Constantinople between the narthex and the nave, but in the equivalent entrance for Hagia Sophia Thessaloniki he simply writes that *'they enter into the church'*. These were the archbishop, his cross bearers, deacons, and monks (bishops and abbots) who entered and took their place in order of rank (Darrouzes, 1976, pp. 50-51) Later (pp.52-53) Symeon describes turning to the west from the *'potamion'*, a station within the naos, to revere the icon of Christ above the 'beautiful doors'. This would suggest that there were a set of doors with the icon set into the arch. This is the location of the icon of Christ in Hagia Sophia, Constantinople, and much later in Hosios Loukas in Boeotia, although those icons face the narthex rather than the naos.

92. Though Symeon described the vespers in his text, Strunk (1977, p. 135) lets us know that the liturgical form is the same. If one traces this route with one's finger, one can feel oneself writing a 'chi-ro' on the map of the church.

93. Given the fact that Hagia Sophia retained the ancient form of processional liturgy, where the Holy Gifts were originally brought from a *skeuophylakion* exterior to the church to make a dramatic entrance through the central doors of the narthex (the beautiful doors, or Royal doors), it would be technically possible for the Gifts to have been brought out of the north door of the chapel of the *proskomide*, within the footprint of the old basilica but exterior to the new church, and enter through the central doors from the exo-narthex (see Fig. 14)

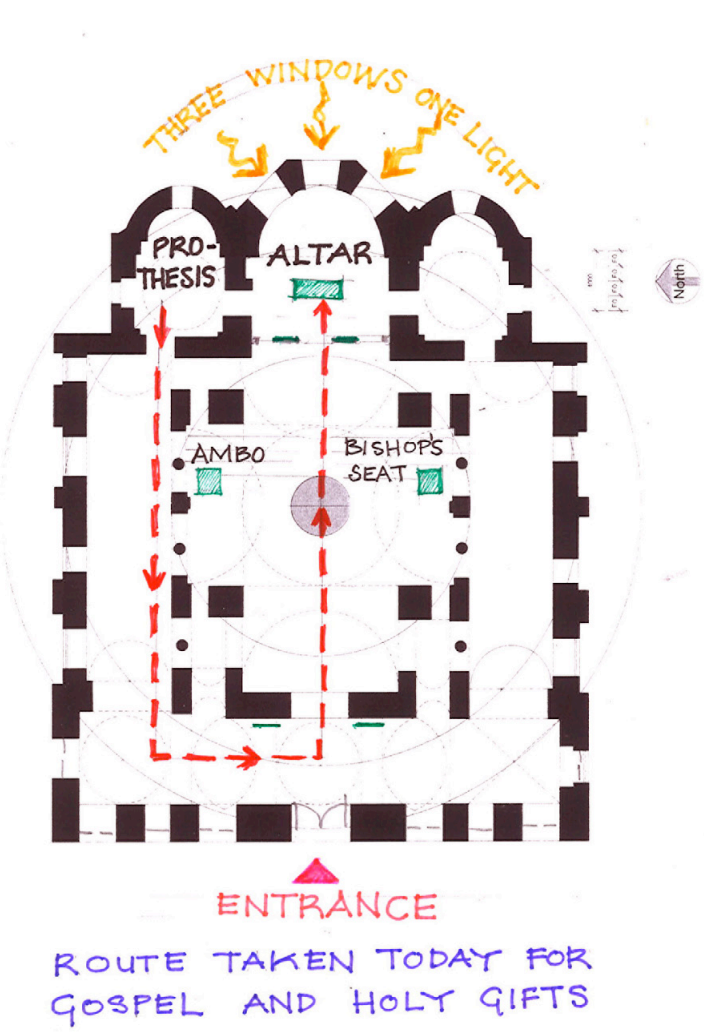


FIG. 26 Above: The processional oute taken by the deacons with the gospel today. The same processional route is also taken with the Holy Gifts of the bread and wine.

Note: The ambo today is not centrally placed as it was in Symeon's time, but is on the left hand side of the naos. The south aisle (men's aisle) does not get a good view of the processional.

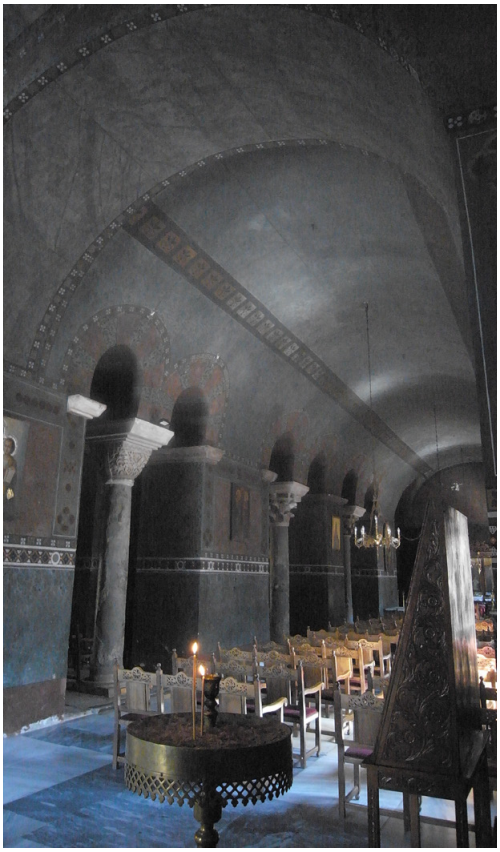
Drawing by author

Fig. 27 Below right: The South aisle (men's) today.

FIG. 28 Below left: The North aisle (women's) today. At the far end is the door to the prothesis.

Photos by author.





nave, through the Holy door to the altar (see Fig. 26, 28).

'Next we praise God himself, the Triune God, as the coming of the saviour revealed him to us' writes Cabasilas, (1977, p. 59). Casabilas explains why, is in term of the Incarnation, 'that angels and men form one church, a single choir, because of the coming of Christ who was both of heaven and earth' (Cabasilas, 1977, p. 59) (see Fig. 24). Then the priest says the 'Thrice Holy' hymn (*Trisagion*).[94]

> ... out of non-existence you brought the universe into being and created humankind according to your image and likeness, adorning it with every gift of your grace. … For you, our God, are holy, and to you we give glory, Father, Son and Holy Spirit, now and for ever.[95] (Chrysostom, 2011, pp. 28-29)

The architecture gives the assembly, facing the altar, a tangible analogy (see Fig. 29),

> 'One light shines forth also in its sanctuary by three open windows, and announces to us the mystery of the Trinity, of the Father and the Son and the Holy Spirit' (Sougitha 1983, trans. McVey p. 91).[96]

The readings from the Gospels bring these concepts into prophetic human history (see Figs. 30, 31). After readings from the Old Testament and Epistles, the deacon reads a passage of the gospels from the ambo in the *naos* (see Fig. 33).[97] Even today, great respect is accorded to the Gospel and it is popular knowledge that latecomers should arrive in time to hear it.

There follows 'fervent supplication' (ἡ ἐκτενὴς ἱκεσία) for God's mercy and blessings on the church and the catechumens, bringing to a close this part of the liturgy. This marks a significant point in the stages of the liturgy when the 'uninitiated' (unbaptised) and unworthy (heretics, penitents, criminals) were

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94. Here, the principle of creation, the relation between God and human, and the three hypostases of the Trinity is introduced

95. *'ὁ ἐκ τοῦ μὴ ὄντος εἰς τὸ εἶναι παραγαγὼν τὰ σύμπαντα· ὁ κτίσας τὸν ἄνθρωπον κατ' εἰκόνα σὴν καὶ ὁμοίωσιν καὶ παντί σου χαρίσματι κατακοσμήσας· … Δόξα Πατρί καί Υἱῷ καί Ἁγίῳ Πνεύματι· καί νῦν καί ἀεί καί εἰς τούς αἰῶνας τῶν αἰώνων. Ἀμήν.'* (Papakosta, 1950, p. 56)

96. Three windows illuminating the sanctuary had been a feature of the basilican churches and was one of the features carried over into the Transitional churches. (The Sougitha hymns the 6th century 'Great Church' in Edessa.)

97. *'Master, Lover of mankind, make the pure light of your divine knowledge shine in our hearts and open the eyes of our mind to understand the message of your Gospel.'* (Chrysostom, 2011, p. 30) The deacon censes the gospel book during the 'alleluias' that precede the reading from the ambo. See Symeon (1987, p. 121) and also Phountoules (2009, p. 9) for a discussion on 'when to cense' today.





FIG. 29 Above: The two groups of cantors at the base of the broad arch (called 'pinsos tou stasidiou' by Symeon) for the best antiphonic echo across the vaulting. Photo by author

FIG. 30 Middle Left: The Gospel book is held as a sacrament, representing Christ, and processed around the church. Available from: https://choratouaxoritou.gr/wp-content/uploads/2019/11/ευαγγελιο.png [Accessed 30 January 2021]

FIG. 31 Below Left: The Gospel book is held aloft on the bema, where the selected part of the Epistle is read. Photo by author



sent out into the narthex and forecourt.[98] These parts of the church towards the setting sun, had analogous qualities of loss of spiritual illumination. The Liturgy of the Faithful then establishes a liturgical perimeter around the space of the faithful and marks the beginning of the Eucharist part of the liturgy.[99]

3.6.2 The 'closing of the doors' for the Liturgy of the Faithful; Perimeter Walls around the inner space

The transition from the prayers for the catechumens to the first supplications of Liturgy of the Faithful reminds us that a ritual *chora* is being established, enclosed by the walls of the church through which the 'uninitiated' must exit and the 'initiated' can enter.[100] Maximos describes this moment in his *Mystagogia,*

> The closing of the doors which takes place after the sacred reading of the holy gospel and the dismissal of the catechumens signifies the passing from material things which will come about after that terrible separation and even more terrible judgement and the entrance of those who are worthy into the spiritual world, that is, into the nuptial chamber of Christ, as well as the complete extinction in our senses of deceptive activity.[101] (Maximos 1985, p. 201) [see Fig. 19]

His 'closing of the doors' refers to the doors of the senses and to the five doors of the narthex through which the faithful entered (see Figs. 18, 19, 20, 24). It precedes the 'Great entrance' with the eucharistic gifts.[102] In order to make

98. In the fourth century, at the time of St. John Chrysotom, and up to the time that Hagia Sophia Thessaloniki was built, the non-Christians and penitents were literally expelled into the narthex and the forecourt at the end of the Litany of the Catechumens. At that time only the baptised were admitted within the naos to participate in the Eucharist. Since almost every person was already baptized by the Middle Byzantine period, this was modified but not lost. Symeon (2011, p. 125) enumerates, 'all unbaptised children of the faithful ... those who are under the authority of the impious ... those who have committed a crime or some other serious sin' as falling into this category.

99. The first two sections of Dionysios' Ecclesiastical Hierarchies are devoted to the ceremony of intiation and baptism into the church. *'At the conclusion of all, the Hierarch calls the man intitated to the most Holy Eucharist, and imparts to him the communion of the perfecting mysteries.'* (Dionysios, 1897, EH, p. 205) Only after all this is he permitted to join in the synaxis. *'Now the regulation of the holy Hierarchy permits the catechumens, and the possesed and the pentients, to hear the sacred chanting of the Psalms, and the inspired reading of the all-Holy Scriptures; but it does no invite them to the next religious services and contemplations, but only the eyes of the intitated.'* (ibid. p. 210)

100. Dionysios describes those who are admitted to the Eucharist, 'But 'initiated' are those who are being conducted to a more perfect revelation of the symbols of the Law, in proportion to their capacity' (Dionysios 1897, EH II, p. 227)

101. The 'nuptial chamber of Christ' alludes to Jesus' parable of the the bridegroom and ten virgins, five of them foolish and five wise (Matthew 25: 1-13). The five doors entering from the narthex were likened to the five wise virgins (see Fig. 19), and indicate the purification of the five senses.

102. This entrance was enacted in the Cathedral liturgies (ekklesiastis typos) by the Emperor and the Patriarch in Constantinople. In Thessaloniki by the Archbishop and his entourage similarly entered into the cathedral of Hagia Sophia.The exact history of the changes in ritual



FIG. 32 Above: The men are on the right and the women on the left of the central axis which is clear. This echoes the visual arrangement of the iconostasis with the icon of Christ to the right, and the Holy Mother to the left of the central door, over which is the first eucharist (last supper) and the cross. The ambo is to the left and the bishop's synthronon to the right. Photo by author.



Note: the iconostasis reiterates the symbolism of the number five, in the lowest (earthly) zone of the church. In the middle (heavenly) zone, the apse to the east has the 9th century mosaic of the Theotokos. Below her are three windows admitting One light representing the Trinity. Photo by author.

FIG. 33 Left: View from the men's aisle on the line of the cross axis in the naos, with the bishop's throne in the foreground and the ambo opposite. The Gospel is read from the ambo, which today can be seen from both the women's and the men's aisles. In Symeon's time, the ambo was placed more centrally, on the main axis from west to east, where the solea of the basilican churches extends into the noas. Beyond the screen wall is the women's aisle, with light filtering in as if through an architectural veil. Photo by author.

sense of the liturgy today as stages, whose mystagogy we too can experience, we must seek meanings in these earlier ritual actions.

Making this ritual perimeter creates a 'sacred space ... that is liturgically enacted, created at this very moment, and experienced (performed) at its very centre.' (Isar, 2004, p. 65). Here we begin to see the resonance between the visible and invisible in the construction of the *chora* as 'the sacred space of liturgical participation' (Isar, 2009, Vol 1:1, p. 42).[103] Architecturally, making this ritual perimeter is analogous to building the massive walls of the church, which seperate exterior space from inner space yet by their inscription in the earth (*graphe*) connects them with its own materiality.[104] The stones and earthly materials define the outer skin of the *naos* containing the body of the community, and by the 'earth' of their being, they *are* its sacred body.[105] Every vertical layer of the walls' construction, stage by stage until they have reached up to obscure our view of the outside world, implies the sequestering of our senses, withdrawing their attention away from the world that we think we know. Thus the material presence of the walls here becomes an active part of the liturgy. They establish the consecrated space of the faithful, the *chora*. The synaxis is guided to leave behind 'deceptive activity' of their senses, and enter into this inner space through 'purified' senses and an awakened intellect (*nous*).[106] The walls bring this into a tangible realm, and thus entering through the walls via the five doors of the

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between the early centuries and the form in which the liturgy is now celebrated is complex and has been thoroughly researched by Robert F. Taft in his many volumed book *A History of the Liturgy of St. John Chrysostom*. See Taft, R (1975) *The great entrance: a history of the transfer of gifts and other preanaphoral rites of the liturgy of St. John Chrysostom,* Roma: Pont. Institutum Studiorum Orientalium; and Taft (2013) 'A History of the Liturgy of St. John Chrysostom. Vol. 6: The Communion, Thanksgiving, and Concluding Rites', *Journal of theological studies.* 64:2, pp.764-766. Oxford: Oxford University Press

103. This she characterises as *Chorography, '... the making of sacred space in Byzantium not as a static notion of some kind, but as a performative spatial inscription. The discourse of chorography is the discourse of the trace of the invisible sacred in the visible.(Isar, 2009, p. 43) ... the intimate relation between chôra and chorós, between space and movement ...' (Isar, 2004, p. 59)*

104. The wall embodies this connection within itself, such as sun and shade, heat and cold, as a unity of opposites (see Chapter 2, p.127)

105. The Sougitha (In: Mango, 1972, v. 9., p. 58) hymns Hagia Sophia Edessa with, *'Its marble is like the Image not made by human hand, and its walls are harmoniously covered therewith; All polished and white, (this marble) is so shining that it gathers light within itself like the sun.'* In fact, all the Constantinopolitan *ekphraseis* - Procopius, Paul the Silentiary, Constantine of Rhodes - make much of the marble of the walls of the church, the landscapes to which they connect the viewer in the invisible chora, and the light that they emit and reflect.

106. Dionysios makes of these a continuum, explained thus by Perl (2007): *'A more careful examination reveals that in this tradition sense and intellect, with discursive reason as a mean between them, constitute a continuuum of modes of cognition, articulated by the degrees of unity in which they apprehend reality.'* (p. 83 / loc. 1359 of 2602)

narthex into the *naos* acquires the symbolism of purification of the five senses.[107]

The Liturgy of the Faithful begins, 'All you who are faithful, again and again, in peace let us pray to the Lord'.[108] The laity is facing towards the east as the priest chants these words, beneath the large mosaic of the *Theotokos* (God-bearer) enthroned with her child located before her heart and within the enclosing line of her body.[109] Her image seems to float in the main apse on the enclosing wall of the church, depicting the incarnation, symbolising the poetics of protection, and explaining the role of the perimeter walls (see Figs. 29 and 38).[110] Defining an enclosure within infinite space makes it possible to conceive of form, which makes *theoria*, as cognition and analogy, possible.[111] Within her womb the image of 'the anointed one' (*Christos*) grew to show the Divine Light to humanity.[112] Thus she is called the *chora tou achorytou* (container of the uncontainable).[113]

107. cf. Pelikan (1990, p. 99 ff.) *'The Senses Sanctified: the rehabilitation of the visual'* for the development of Byzantine aesthetics of sense perception.

108. *'"Οσοι πιστοί, ἔτι καὶ ἔτι ἐν εἰρήνῃ τοῦ Κυρίου δεηθῶμεν.'* (Papakosta, 1950, p. 72) The priest or bishop entreats forgiveness by God's grace. Supplication for such purification and access to the realm of the nous fills the first and second prayers for the faithful, *'Again and many times we fall down before you and pray you, who are good and the lover of mankind, that heeding our prayer you will cleanse our souls and bodies from every defilement of flesh and spirit, and will grant us to stand without guilt or condemnation before your holy altar.'* (Chrysostom 2011, p. 36)

109. The word Theotokos gets its root from Proto-Hellenic *tíktō*, from Proto-Indo-European *títketi*, an i-reduplicated present formed from the root tek- ("beget, bring forth"). Cognate with τέκνον (téknon, "child"), τέκτων (téktōn, "builder"), τέχνη (tékhnē, "craft").

110. The inner consecrated space of churches acquired a legal status as places of refuge, see The Justinianic Code, *Ecloga, Book I, Title XII 'Concerning those who take refuge in churches; or who cry out while there; and let no one remove them therefrom.*' (Trans. S.P. Scott, In: The Civil Law, XII, Cincinnati, 1932)

111. See the explanation of *Theoria* in Chapter 3 (pp.101-105).

112. Marinis, V. (2015, pp. 760-761) in his essay *Historia Ekklesiastike kai Mystike Theoria: a symbolic understanding of the Byzantine church building* proposes, *'They both carry inside them the body of incarnate Christ, which in the case of the building is the assembly of the faithful, as already mentioned in the opening line of the Historia. And other architectural analogies connect the Mother of God to the church building, such as her epithet ἔμψυχος ναός – "living temple" – and the dome itself, which was a norm in churches by the eighth century. The author of the Historia, in using "earthly heaven," could be invoking the domed building that, filled with the body of Christ, becomes a symbol of the pregnant Theotokos ... A twelfth-century ekphrasis of Hagia Sophia by Michael the Deacon uses the language of pregnancy to describe its naos and dome. 'Furthermore, the word "to dwell," ἐνοικέω, although part of a quote, is often used to describe Christ dwelling in the womb of the Theotokos.'*

113. Her epithet, 'Chora tou Achoretou' (ΧΩΡΑ ΤΟΥ ΑΧΩΡΗΤΟΥ), written on the mosaics of the Chora (Χῶρα) church in Constantinople, is usually translated 'container of the uncontainable'. The word Chora, actually means place or land, a space opened up within a kind of 'prima materia', relating to the Platonic 'chora'. Achoritou then means that for which a space cannot be made: 'a space opened up for that which cannot be acommodated by space'. In Constantinople, the Theotokos' image was associated with the protection given by walls for Byzantine cities under siege, when the lengthy Akathistos Hymnos was chanted. The hymn describes her qualities including certain metaphors of building, *'Hail, O pillar of purity. Hail, O portal of redemption.'* and

The image of the *Theotokos* not only notates the theology of the incarnation, she also symbolises how the wall and doors connect outer and inner space, the limitless and the defined, formless and form. When the church was built with aniconic mosaics, the architecture itself and the movement of the liturgy alone would have expressed these concepts.

By setting up a wall and doors, the external sacraments and the internal archetypes can be distinguished and then united like the infinite expressions of a symbol. The liturgy has presented the outer symbols and set out the theology in the Litany of the Catechumens, but the intuitive inner meaning of the sacraments as 'holy signs' is still obscure.[114] Dionysios tells us the goal of the 'Mysterion of Synaxis, that is, Communion',

> Let us, then, leave behind these things, beautifully depicted upon the entrance of the innermost shrine, as being sufficient for those who are yet incomplete for contemplation, and let us proceed from the effects to the causes; and then, Jesus lighting the way, we shall view our holy Synaxis, and the comely contemplation of things intelligible, which makes radiantly manifest the blessed beauty of the archetypes. (Dionysios, EH, p. 208)

Maximos summing up in his *Mystagogia* explains,

> Then by the closing of doors which follows there is effected the passage and transfer of the soul in its disposition from this corruptible world to the intelligible world, whereby having closed the senses like doors it renders them cleansed of the idols of sin. By the entrance into the holy mysteries we see the more perfect and mystical and new teaching and knowledge of God's dispensation toward us. (Maximos 1985, p. 207)

One should not equate this 'transfer of the soul from this corruptible world to the intelligible world' as somehow detaching from the weight of our sensory physicality. Von Balthazar (2003, loc. 5655 of 8806) writes that Maximus does not equate 'Christian love with a detached gentleness' because, 'the weight of our vulnerability is not simply a "spirit of heaviness" but also the healthy and necessary gravity of earthly existence.'[115] It is rather a reorientation of focus *to harmonize with* the intelligible, thereby revealing their mutual 'radiance'. As the ma-

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'Greetings you through whom the building is renewed. Greetings you through whom the builder is suckled/nourished' (Akathist Hymn, Stasis A).

114. Dionysios explains the synergy between the liturgical symbol and inteligible archetype in the Ecclesiastical Hierarchy, *'… our Hierarchy is, as I said, a kind of symbol adapted to our condition, which needs things sensible, for our more Divine elevation from these to things intelligible. Nevertheless the reasons of the symbols have been revealed to the divine initiators [the mystagogues / hierarchs], which it is not permitted to explain to those who are yet being initiated …'* (Dionysios 1985, EH, p. 197)

115.Von Balthazsar, Urs H. (2003) ***Cosmic Liturgy: the universe according to Maximus the Confessor,*** Trans. B. Daley, San Francisco: Ignatius Press. Available from: https://kindle.amazon.com [Accessed 13th June, 2022]



FIG. 34 Above left: The ascension (analipsis) of Christ being borne aloft by angels at the apex of the dome.

Available from : https://www.pallasweb.com/p/new-sophia-thess-5.jpg [Accessed: 5 December 2021]



FIG. 35 Below left: Looking up into the dome centre. The Mosaic of the ascension explains the theology in terms of the masonry architecture. The unity at the centre is represented by Christ being borne up into God in the Ascension. The origin of the radiating light of creation from the centre is "beyond all" and is hidden behind the figure of Christ, but the light radiates through him to the Apostles and Mary, who are the "radiating lines" of Dionysios' and Maximos' Mystagogia. The sunlight, representing the Apostles and Mary, and all the saints is the part of these radiating lines that transitions to the tangible world, from whence the masonry architecture radiates its geometry down to the earth.

Photo by author.

sons have built up these walls, they too were mindful of their intrinsic weight on their journey to 'seeing' their radiance.

3.6.3 The Great Entrance and repentance; from narthex, to naos (nave) and mysterium (sanctuary)

Ritually setting up a wall and closing the doors precedes the next stage of the liturgy, the Great Entrance.[116] According to Solevey,

> 'The principal rite of the Great Entrance is the transfer of, i.e., the solemn procession with, the holy gifts, from the Table of Prothesis to the altar. The rite of incensing precedes the act of transferring the holy gifts. The deacon usually performed this rite while the priest prays silently. According to the present day Typikon or Order of Celebration, the deacon, or the priest (if the deacon is not present) incenses the altar, sanctuary, Table of Prothesis, iconostasis and the people. The incensing here has the same connotation as in other parts of the liturgy, namely, purification and sanctification.' (Solovey, 1970, pp. 232-233)

Archbishop Symeon writes that in his time, 'the procession of the honourable things and the entrance takes place with splendor, preceded and followed by lectors, deacons, and priests with sacred vessels.'[117]

In Hagia Sophia, Thessaloniki, today the procession takes the eucharistic gifts of the bread and wine from the altar of the *prothesis* in the north apse, through the length of the north aisle, and part of the narthex, enters into the *naos* through the 'beautiful gate' in the west, facing east along the ancient processional axis of the church passing under the dome, to bring the gifts through the 'Holy doors' in the centre of the *iconostasis* where they are placed on the main

116. Patricios (2014, p. 388) writes that '*There were once five processions in all. First there was the Little Entrance, as it was called later, when the bishop and clergy entered the church from the narthex through the Royal Doors and then they proceeded through the naos to the bema where the Holy Table was located. At the head of the procession was a deacon holding aloft the book of Gospels accompanied by other deacons with candles and incense. The second procession occured when the deacon took the book of Gospels from the holy table and proceeded along the solea to the ambo in the middle of the naos where he would do the reading. The movement from the Holy Table and back was simple at first but with more grandeur over time. The third procession was the great Entrance itself. Deacons would enter the church from outside bearing the gifts of bread and wine which they handed to the bishop at the Holy Table. Over time this procession became the grandest of all with pomp and cicumstance. Less formal was the fourth procession. After the consecration men and women would proceed to seperate sides of the sanctuary barrier to recieve communion. The fifth and final procession was at the conclusion of the service when the clergy would exit the church in a formal group.*'

117. Mainstone (1988, p. 231) writes of Hagia Sophia, Constantiople that, *'there was an increasing emphasis on the two processions into the midst of the congregation - the ceremonial carrying of the Gospel to and from the ambo, which came to be knwon as the Little Entrance, and the offertory procession which developed into what came to be known as the Great Entrance.'*

altar for consecration.[118] Hagia Sophia's massive 'perforated' piers and the screen walls, divide the side aisles (ambulatory) from the naos, obstructing a clear view of the ceremony.[119] Bringing the holy gifts 'around the nave' enables more people to see them through the solid and void of the screen walls and perforated piers.[120] It allows most of the assembly a contact with the gifts.[121] The form in which this procession is made today is identical to that of the 'small entrance', suggesting a similar repetition in Symeon's day (see Figs. 25, 27).

The Great Entrance contains a reminder of spiritual poverty because it marks a moment of humbling, of coming down to earth. This Great Entrance, which is repeated in every liturgy and in every church, 'enters' the consecrated space of the *chora* at the lowest level of the ground floor.[122] The tone of the liturgy alters and becomes very personal, somehow intimate. The priest softly chants Psalm 50 (51) as he goes to the altar.[123] It was a moment of awakening to reality that caused King David to compose this exquisite psalm, which is filled

118. People also prostrated to the priests which Symeon does not condemn, 'for we do not commit idolatry in prostrating ourselves before the divine gifts - far from it! - but we give honor to the gifts offered to God through prayers.' (Symeon, 2011, v. 66, p. 129). Paul the Silentiary also writes about the people thronging around the holy gifts (xxxx, xx).

119. Archbishop Symeon writes how in earlier times the prothesis was in a nearby detached building, enabling the literal entrance through the narthex, 'The place of the skeuophylakion [lit. 'the place to keep vessels'], which is also called pro-thesis [offertory], to the side of the sanctuary [mysterium] signifies Bethlehem and the cave. That way it is secluded and not far from the sanctuary, although it used to be further out in the large churches for the safekeeping of vessels. That it is secluded indicates the poverty of Jesus when he first appeared, and the poverty of the place, and the almost unnoticed and rough cave…' (In: Marinis 2014, p. 32)

120. Comparing the 6th century Hagia Sophia in Constantinople with the development of the cross-domed basilicas Buchwald (1999, p. 45) writes, *'Like the previous group of churches, cross-domed basilicas are similar to St. Sophia, but they have wider major lateral arches which give their domes improved lateral stability. In contrast to St. Sophia, the lateral arches and supporting piers are entirely inside the building, creating a more complex and less unified nave.'*

121. If the old 5-aisle basilica of St. Mark were integrated with the new church of Hagia Sophia so that a passage existed between the basilica's north wall and the new church's north wall it may have been possble to bring the gifts from the apse of the Prothesis exterior to the church, into the exo-Narthex and from there into the eso-Narthex to begin the procession within the *naos*. Theoharidou (1988, pp. 13-14) writes that, *'A long single-chambered chapel with a semi-circular apse containing a synthronon, with a bishop's seat at the centre, was built parallel to, and in contact with, the north wall. The chapel took up the whole width of what had been the basilica's northernmost aisle and its outer north wall stood upon the foundations of the basilicas north wall.'* The upper structure is dated late to the 14th century and the lower part also after the church's construction because, *'the chapel's marble floor continues under the easternmost blocked-up opening in the church's north wall, thus showing that there was direct access between church and chapel'.*

122. In the past the highest officials, emperor, patriach, archbishop, descended from the upper galleries to narthex on the ground floor to make the entrance (see Mainstone 1988, 231).

123. The Psalms are numbered according to the Orthodox use (based on the Greek Septaguint and Latin Vulgate), followed by the number in brackets according to most English translations (based on the Masoretic texts). The use of the Septaguint numbering is logical when referring to the Orthodox liturgy. Since the King James Version, would designate this Psalm as number 51, the traslations quoted here are by Brenton (1844), to avoid further confusion.

not only with his repentant realization of his weighty crime against God's creation (by effectively murdering Bathsheba's husband and then marrying her), but also the expression of God's divine love and compassion for the repentant sinner,

> Have mercy upon me, O God, according to thy great mercy; and according to the multitude of thy compassions blot out my transgression. Wash me thoroughly from mine iniquity, and cleanse me from my sin. For I am conscious of mine iniquity; and my sin is continually before me. Against thee only have I sinned, and done evil before thee […] Sacrifice to God is a broken spirit: a broken and humbled heart God will not despise. (Brenton's Septaguint, 1844, Psalm 50)

Just as the spirit of humility and love in Christ embodies God coming down to earth in the flesh, so the repentance of the entire *synaxis* brings them humbly down to earth as well as a great leveller. In the Cathedral liturgies, the magnitude of this effort was ritually presented in Hagia Sophia, Constantinople, when the Emperor himself entered with his entourage,[124] not as the centre of attention but to escort the Patriarch, deacons and novices, acknowledging that his worldly power was subject to Christ as King of all.[125] Archbishop Kantiotes (1986) describes the scene,

> We cannot imagine with what deep contrition the Great Entrance was made in the ancient Church. And especially in the magnificent church of Hagia Sophia (Holy Wisdom) at Constantinople; it was very moving for someone to see the king, together with the highest officials, waiting outside the northern door of the sanctuary, in order to escort the celebrants of the Most High to the center of the church, where the holy procession used to stop, in order that special supplications could be offered .... 'Turn not away Thy Face from me, neither reject me from among Thy children, but consider me worthy, so that these Gifts may be brought near to Thee by me, thy Sinful and unworthy servant. For Thou art the Offerer and the Offered, the Acceptor and the Distributed' (Kantiotes 1986, pp. 47-49) [126]

Cabasilas (2006, p. 65) speaks of the candles and incense accompanying the liturgical movement of Great Entrance until the gifts come to the altar., and like

124. *'According to the Book of Ceremonies of Constantine VII Porphyrogenetus in the tenth century, the Emperor himself participated in the liturgy 17 times a year.'* (Doig, 2016, pp. 73)

125. *'The Emperor arrived in the south vestibule of the narthex and removed his crown in a screened-off area, then entered the narthex proper, where the Patriarch was waiting. The Emperor would first bow to the Gospel book, then greet the Patriarch. They proceeeded to the Imperial Doors and prostrated themselves three times, giving thanks to God. ... On entry, Emperor and Patriarch were preceded by a deacon bearing the bejewelled Gospel book, representing Christ himself, accompanied by candles and a thurifer with incense. The procession followed the axis of the church past the ambo and entering the solea ... the Emperor prostrated himself three tiimes, entered the chancel, prostrated himself before the Patriach, and kissed the altar-cloth. ...'* (Doig, 2016, pp. 74-75)

126. The quote is from the prayer of the Cherubimic Hymn (see Papapkosta, 1950, pp. 84-86)



FIG. 36 Above left: Detail of an orthodox censer with icon of Christ in the background. The icons are censed just as the living people, since the holy persons and saints are considered to be equally present in the chora of the church.

Source: https://stvasiliosbrunswick.com/incense/

Precedents for the incense and the iconostasis (templon) as a screen or veil before the altar, were specified in the instructions for setting up the portable tabernacle of the Jews. Then the Lord spoke to Moses, saying: 'On the first day of the first month you shall set up the tabernacle of the tent of meeting. You shall put in it the ark of the Testimony, and partition off the ark with the veil. You shall bring in the table and arrange the things that are to be set in order on it; and you shall bring in the lamp stand and light its lamps. You shall also set the altar of gold for the incense before the ark of the Testimony, and put up the screen for the door of the tabernacle.' (Exodus 40:1-5, NKJV)

FIG. 37 Below: Censing. The icon of Christ and the Holy Mother to right and left of the 'Holy door', which are censed along with the people to left and right. The altar is visible within.

Photo by Author



Symeon, he too writes that, 'we must prostrate ourselves before the priest and entreat him to remember us in the prayers which he is about to say.'[127]

The use of incense for purification is beautifully put by the Syriac Liturgies.[128] When putting incense into the censer the priest says,

> O Lord, let that same sweet odor, which came forth from Thee when Mary the sinner poured upon Thy head the precious ointment, mingle with this incense which we offer before thy majesty for the forgiveness of our sins and transgressions. (Badger 1875, p. 3)

The poetic aroma of the burnt offering permeated the ancient Jewish and Graeco-Roman world, yet sometimes the Jews substituted incense with the offering of prayers. Later, Christians took on this metaphor with the 'bloodless sacrifice' of the eucharist, transforming the aroma of the burnt offering into that of frankincense, myrrh, rose, and resins,

> As the smoke of the incense rises up to heaven, in the same way the prayers of pious people rises up towards heaven. The prophet King David says: 'Let my prayer be set forth as an incense before Thee, the lifting up of my hands as an evening sacrifice' [Psalm 140:2] (Kantiotes 1986, p. 53)[129]

Repentance is a kind of burning and its smoke is a poetic release. Seeing the smoke of the incense drifting into the furthest corners of the church gently leads one's mind to float through the air towards the intangible world, visible to the intellect (*nous*) (see Figs. 35, 36).[130] In this frame of mind of sacrificing one's false-

127. Cabasilas (1977, p. 31) explains thow the ritual tratment of the eucharistic offering reflects its unique status, *"...under the Old Law there were several types of sacrifice`; they sacrificed to God the blood of brute beasts; they also offered him gifts, such as vessels of gold and silver. Now the body of Christ belongs to both these types. ... That is why the oblations, which represent the body of Christ, are not immediately taken to the altar and sacrificed. The sacrifice comes at the end. They are dedicated first; they are precious gifts offered to god, and they are described as such."*

128. Dix (1949) has some interesting notes about the use of incense as a propitiatory offering, *'a passage in the Carmina Nisibena of the East Syrian S. Ephraem composed in A.D. 363, which reveals that this thoroughly Jewish idea of the smoke of incense as in some sense an atonement or "covering" for sin [...] A "prayer of incense" found in the oldest MS. (ninth century) of the Jerusalem Liturgy of S. James runs thus: "Thou that art made High-priest after the order of Melchizedek, 0 Lord our God, Who offerest and art offered and receivest the offerings; receive even from our hands this incense for a savour of sweetness and the remission of our sins and this of all Thy people" [...] Other examples could be cited from Eastern Rites.'* (pp. 427-428)

129. Ouspensky (1964, p. 191) sees *'the Christian church as a continuation within Christianity of both the temple and the synagogue of the Old Testament. As a congregation of worshippers in prayer (ecclesia) the Christian church is a continuation of the synagogue; at the same time it is a continuation of the Old Testament temple, since it is not only a place of assembly for prayer, but also a sacramental place, a place of sacrifice.'*

130. See Dionysios (1897) *'We must, then, in my opinion, pass within the All Holy Mysteries, after we have laid bare the intelligible of the first of the votive gifts, to gaze upon its Godlike beauty, and view the Hierarch, divinely going with sweet fragrance from the Divine Altar to the furthermost bounds of the holy place, and again returning to it to complete the function. For the Bless-*

ness, and offering up prayers, it seems as if the bread and wine could effortlessly transform by sacramental change (*metabole*), while the smoke of incense drifts across the consecrated interior space, the *chora*.

The Great Entrance calls all those assembled to repentance and to return to God. The emotional doors between sensing the outer symbols and being conscious of their inner archetypes (the 'intelligible archetypes' of Dionysios) can only be opened with the utmost humility and purity of heart, if the person is to be led to a truthful communion.

The Cherubimic Hymn, added to the liturgy by the Emperor Justinian I, is sung during the 'Great Entrance'. The hymn entreats the celestial hierarchy of angels to accompany the procession of the ecclesiastical hierarchy and public officials, as they bear the gifts of the bread and chalice to the altar before consecration.[131] Implicitly, it entreats the synaxis to see the 'intelligible archetypes' as well as the material sacraments. The liturgical focus on repentance and the shedding of cares combines in the words of the Cherubimic hymn, which invites the synaxis to 'lay aside all worldly cares' and to receive the King of all. It suggests a world beyond that of the five senses through a weightless angelic imagery.[132]

> Let us, who in a mystery represent [*eikonizontes*] the Cherubim and who sing the thrice-holy hymn to the life-creating Trinity, now lay aside every care of this life. For we are about to recieve the King of all, invisibly escorted by the angelic hosts.[133] (Raya 1958, p. 82)

It presents a mirroring of the visible and the invisible, the sacramental and the archetypal, through the word *eikonizontes*.[134] Foucault's second similitude of

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*edness, supremely Divine above all, even if, through Divine goodness, It goes forth to the communion of the holy who participate in It, yet It never goes outside its essential unmoved position and steadfastness; and illuminates all the Godlike in due degree, being always self-centred, and in nowise moved from its own proper identity; so, too, the Divine initiation (sacrament) of the Synaxis, although it has a unique, and simple, and enfolded Source, is multiplied, out of love towards man, into the holy variety of the symbols, and travels through the whole range of the supremely Divine description; yet uniformly it is again collected from these, into its own proper Monady, and unifies those who are being reverently conducted towards it.' (*EH, Section III, p.)

131. Dionysios describes for us the accepted view of angels at that time, *'... the angels know .... the things on earth, knowing them not by sense perceptions (although they are sensible things), but by the proper power and nature of the deiform intellect.'* (Dionysios, DN VII.2, 869C)

132. In his writings, Saint John Chrysostom observed the place of man, encircled by angels, within sacred space: *'Think beside whom you stand, with whom you are about to call on God—with the Cherubim'* (Homilies 4.408–409). (In: Gerstel, Kyriakakis et Al. 2018, p. 205)

133. *'Οἱ τὰ Χερουβὶμ μυστικῶς εἰκονίζοντες καὶ τῇ ζωοποιῷ Τριάδι τὸν τρισάγιον ὕμνον προσάδοντες, πᾶσαν νῦν βιοτικὴν ἀποθώμεθα μέριμναν. Ὡς τὸν Βασιλέα τῶν ὅλων ὑποδεξόμενοι ...'* (Papakosta, 1950, p. 80)

134. The verb *eikonizein* means to represent, 'to icon', and also describes the action of the icons in connecting to a virtual topos, that will be addressed in the next chapter on the iconography of the church. Suffice to say here that the liturgy asks the person to withdraw from attachment to the senses, a process of repentance and supplication, to evacuate their own status and let the angels take their place. In the process they fall on their knees and prostrate in supplication. A

emulatio describes a kind of mirroring where 'the world abolishes the distance proper to it'.[135] The liturgy could be said to be moving us from Foucault's first similitude of *convenientia*, adjacency in the world of the senses, to that of *emulatio* in the iconic world where the earthly refers to the divine, described in Dionysios' *Celestial Hierarchy* and *Divine Names*.

The hymn places Christ as high priest within the celestial hierarchy 'borne aloft on the cherubic throne, Lord of the Seraphim' which one sees depicted high above in the dome mosaic of Hagia Sophia (see Figs. 34, 35).[136] In Byzantine symbolism, angels are depicted as messengers 'encircling the throne', the central seat of power.[137] They represent analogical communication, that combination of *convenientia* and *emulatio* with the power to instantly refer one thing to another.[138] In Dionysios' *Celestial Hierarchy* the angels carry the qualities of divine names from their attributive place to the source, and simultaneously they represent the power to transport from the heavenly realm to the earthly one.

At the time of the cherubimic hymn, the ecclesiastical procession of the bread and chalice through the church, traditionally pauses in the centre of the *naos*. Those who glance upwards as the procession passes beneath the main dome get a sense of the vertical height and its apparent weightlessness, both analogous qualities for the *anafora* (offering up) which is to come. The bread and chalice are now taken back behind the *iconostasis* in preparation for the *anafora* at the altar.

Supplication is a continuous theme throughout the liturgy, where the priest entreats God on behalf of the community, 'Help us, save us, have mercy on us, and keep us, O God, by Your grace', and between each stanza the synaxis re-

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small vestige of this action occurs when the laity make the sign of the cross, kneel to touch the floor, and again make the sign of the cross.

135. See Foucault (2002, p.23) *'... the wisdom of the mirror will in turn be reflected back to envelop the world in which it has been placed; its great ring will spin out into the depths of the heavens, and beyond; man will discover that he contains "the stars within himself ..., and that he is thus the bearer of the firmament wih all its influences"'.*

136. *'ὁ ἐπὶ θρόνου χειρουβικοῦ ἐποχούνερος, ο τῶν Σεραφεὶμ Κὺριος'* (Papakosta, 1950, p. 84)

137. *'The angel is an image [εἰκῶν] of God, a manifestation of the unmanifest [φανέρωσις τοῦ ἀφανοῦς φωτός], a pure mirror, most transparent, unblemished, undefiled, spotless, receiving whole, if it is right to say, the bloom of the good-stamped deiformity, and unmixedly shining back in itself, as far as it can, the goodness of the silence in the sanctuary'* (DN IV.22, 724B)(In: Perl 2007, p. 98 / loc. 1615 of 2602)

138. *'As Dionysios here indicates, however, human souls are not confined to the level of discursive reason, but, as in Plotinus, can ascend to the level of intellection and beyond. He repeatedly presents the angels as paradigms for human cognition, describing our attainment of intellection as equality with, imitation of, or union with the angels.'* (DN I.4, 592C; DN IV.9, 705A; DN VII.2, 868C) (In: Perl 2007, p. 90 / Loc. 1485 of 2602)



FIG. 38 Above: The priest is at the altar, behind the screen of the iconostasis, and the assembly alternately stand, sit, or some kneel or touch the ground, during the relevant parts of the ritual. This is around the time of the offering up (anafora) at which the Creed and the Lord's prayer are recited. The central door is closed after the creed, and before the communion is brought out into the naos. Photo by author.

sponds, 'Lord have mercy'.[139]. The kiss of peace, described by Maximos, is now exchanged only between the celebrants.[140] For the assembly, too, there is a sense of the effort required to change one's heart and make peace, and that what we do in our life has an effect in the community and in the world. These prayers for healing and mercy are a reminder of the weight of people's suffering. In the reconciliation of the kiss is the love for one another which Jesus asked of his disciples. During such supplications, there is time for the assembled community to ask God to solve their problems and save them from disasters.[141] Here, the bishop or priest asks for the strength to take on his role in the *anafora*, as hierarch and representative of Christ, in the lifting of suffering,[142]

> When the divine gifts have been set on the sacred altar they are covered. ...Bowing down, the bishop requests a prayer from all, 1) acknowledging his human weakenses and in fear and trembling before the task, and 2) carrying out the apostolic saying that everyone should confess to one another his transgressions, and pray for one another. For he does not trust in himself since he too is only a man.' (Symeon, 2011, p. 131)[143]

The anafora and the sacrifice of the next stage will mostly happen behind the veil of the iconostasis, enhancing the feeling of empathy and love for the laity in the *naos*, and assisting us to reach for understanding beyond the limit of the outer senses.

3.6.4 The *Anafora* (offering up, sacrifice); between *Mysterium* and *Naos*

The next stage of the liturgy centres around the *anafora*, the 'offering up' of sacrifice, and the remembrance of God (*anamnesis*). Its spatial movement converts the horizontal to vertical, moving from offering and sacrifice to remembrance, resurrection, and the Holy Spirit.[144] It includes the veil of the iconostasis, and the act of standing firm in the Creed and the Lord's Prayer. Until this moment,

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139. "Ἀντιλαβοῦ, σῶσον, ἐλέησον καὶ διαφύλαξον ἡμᾶς, ὁ Θεός, τῇ σῇ χάριτι. Σοφία." "Κύριε, ἐλέησον", (Papakosta 1950, p.40)

140. Cabasilas (1977, p.69) reminds us of Jesus' words in Matthew 5:23, 'first be reconciled to thy brother, and then come and offer they gift'.

141. The Syriac Damascus Liturgy of St. Basil is more graphic, specifically listing disasters, 'Deliver, Lord, this city, and every city and province, from famine, and pestilence, and earthquake, and inundation, and fire, and sword, and foreign invasion, and civil war.' (Ferrette 1866, p. 67)

142. cf. The pre-Nicene liturgy of Hipplytus sections d) and e) (Fig. 4, Table 1)

143. *'The priest prays that he be judged not unworthy to perform so great an act, but that he may devote himself to the sacrifice with pure hands, a pure heart, and a pure tongue.'* (Cabasilas,1977, p. 26)

144. Solevey (1970, pp. 254-255) traces the *'oldest formula for the Anaphora'* to the liturgy of St. Hippolytus which has, *'six integral parts: 1. The Eucharistic dialogue, 2. the prayer of praise and thanksgiving, 3. the words of consecration, 4. the Anamnesis, 5. the Epiklesis and 6. the concluding doxology. All these elements are distinguished for their classical brevity and unity.'*



FIG. 39 Above: At this moment in the liturgy, the central door of the iconostasis is closed with a curtain offering us the chance to meditate on the unity of all things and on what is veiled and what is revealed to human senses.

FIG. 40 Left: View of the mysterium from the gallery around the naos, which is not divided by the iconostasis at this level. Photos by Author.



the litugy's directional and processional has included a circular motion around the space of the aisles, narthex, and naos, as well as emphasising the horizontal axis from west to east as if one were in a basilica church. Maximos' *Mystagogia* assigns different qualities to each part of the church (*ekklisia)* horizontally and then he reminds us that it is one space.

> For while it is one house in its construction it admits of a certain diversity in the disposition of its plan by being divided into an area exclusively assigned to priests and ministers, which we call a sanctuary [*mysterium*], and one accessible to all the faithful, which we call a nave [*naos*]. Still, it is one in its basic reality without being divided into its parts by reason of the differences between them, but rather by their relationship to the unity it frees these parts from the difference arising from their names. (Maximos 1985, p. 188)

He likens the *ekklisia* to God, then to an image of the world and of the world of the senses, then to the human being and to the soul.[145] The church is 'a figure and image of the entire world, composed of visible and invisible essences because like it, it contains both unity and diversity.'[146]

> This is like another sort of church not of human construction which is wisely revealed in this church which is humanly made, as it has for its sanctuary the higher world assigned to the powers above, and for its nave the lower world which is reserved to those who share the life of sense. …" (Ibid., p. 188)

His physical description is horizontal but his 'church not of human constuction' is defined by vertical metaphors. He connects the horizontal axis with vertical relationships where the 'upper world' is inhabited by the angelic powers and the 'lower world' is inhabited by humans, since angels do not 'share the life of sense'. Thus far the liturgy has been moving through three zones horizontally -the narthex, the nave, and the mysterium- unfiying them without their losing their distinctions; the iconostasis has been the veil between them, the curtain alternately opened or closed to demonstrate their unity and diversity (see Figs. 14, 24, 38).[147] Now, as the liturgy draws closer to communion, the vertical metaphor

145. *'Using a traditional Neoplationic analogy, he (Dionysios) ascribes to soul three "motions," circular, spiral, and linear, corresponding to intellection, discursive reason, and sense perception.'* (Perl 2007, p. 90 / Loc. 1485 of 2602)

146. In this hierarchy of relationships described in Maximos' Mystagogia, one senses the distant influence of Plotinus' relationship of parts, such as the soul to the body, the senses to the soul and so on.

147. According to Ouspensky (1964, pp. 192-193) *'It may well be that a curtain was the most ancient form of the iconostasis. Certainly St. Paul's comparison of the flesh of Christ to a curtain or veil (Heb. 10:20) could have been the inspiration ...' and he then goes on to say that , 'The cosmitis with its cross is a representation (esphragisma) of the crucified Christ (i.e. of His flesh), but it is also a figure (typos) of the catapetasma [curtain]... no matter what form the sanctuary screen may subsequently take, its analogy to the Old Testaent catapetasma will continue to live in the mind of the Church.'* Of these different forms, Gerstel (2006) focuses on the stone 'templon' or icon-screen. She notes that their symbolic form is the same as their wooden

will also speak of the unity of three hypostases. These are represented in the architecture of the church as three vertical layers distinguished by grey stone cornices, while the space of the church is one (see Figs. 13, 15).

Returning to the liturgy, the focus is now very much on the altar within the *mysterium*. Behind the veil of the *iconostasis* the bishop or priest makes the offertory prayer sometimes audibly, sometimes silently.[148] His focus is on offering his own self, as Christ offered his. The curtain will be closed over the 'Holy Door' and the sanctuary will not be visible to the people in the *naos* who are stretching their senses to the limit. During the *anafora* the priest cuts the communion bread into four quarters, saying quietly,

> The Lamb of God is broken and distributed is broken, broken yet not divided, ever eaten yet never consumed, but sanctifying those who partake. (Chrysostom 2011, p. 52)

The liturgical words convey the essence of unity within multiplicity in which the assembly will partake.[149]

Meanwhile the deacon leads the people in the *naos*. Before the *Anafora*, he exclaims, 'The doors, the doors. With wisdom let us attend'! (Ibid. p. 43). According to Kantiontes (1986, p. 108) 'a person's doors are his senses'. [150] This is the only time that the central Holy door is closed, completely veiling the altar (see

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counterparts but that they provide firm dating from the 13th century. They generally present a proscenium of carved columns, a cornice (cosmitis), and a central door. Marinis (2014, p. 43) writes, *'Despite the limitations of the evidence, it is safe to assume that the post-Iconoclastic templon consisted of low or chest-high parapets surmounted by columns that carried an architrave* [cosmitis]*.'* In *The Proskynetaria of the Templon and Narthex,* Kalopissi-Verti (2006, p. 107) confirms the features of the Middle and Late Byzantine period *proskynetaria* and gives the example of the stone templon (iconostasis) in the restored *katholikon* of Hosios Loukas monastery in Boeotia. These *'were common in cross-in-square churches and their variants, as well as in domed octagons and basilicas.'*

148. *'From a novel of the Emperor Justinian (527-565) it is learned that the custom of reciting the Anaphora silently was already widespread in those times. Justinian opposed the custom and strongly forbade its practice.'* (Solevey, 1970, p. 256)

149. The sermons of the late 20th century archbishop Kantiotes tell of the sincerity with which the anafora offering should be made at the altar, *'The priest must always feel his unworthiness especially during the time when he is celebrating and offering the Highest Mystery. He himself should not be in his place, nor any other man, regardless of how perfect he is, but one of the angels and archangels of the heavenly world.'* (Kantiotes 1986, p. 50) He derives this tradition from Zacharias' vision, *'May an angel be present when we too cense the holy sanctuary.'* (Kantiotes 1986, p.54)

150. *'Τὰς θύρας, τὰς θύρας· ἐν σοφίᾳ πρόσχωμεν.'* (Papakosta, 1950, p. 98). Archbishop Kantiotes, explains in his homilies, *'"The doors, the doors, in wisdom let us attend." This order, historically justified in the practice of the ancient church, can be interpreted also allegorically [...] According to St. Paul, every Christian attending church is himself a holy temple. The doors of this temple are the senses, especially the sight and hearing. Through these, various impressions from the external world enter the soul [...] a person's doors are his senses.'* (Kantiotes, 1986, p. 108)

Fig. 38).[151] On either side of the *iconostasis* a spatial and audible dialogue goes on between the *naos* and the *mysterium*. It is as if our outer sense perception is being blocked and we must call on the intuitive mind to try to understand what is going on. The architecture in which we stand expresses this condition through its vertical levels divided by stone cornice lines; the space on the ground level is divided by the *iconostasis*, while above the level of the first stone cornice the space of the balconies and arches is one continuous space. The liturgy works together with the building to guide us to rise from the base level of sensory perception to the angelic level of the intellect and the intuitive mind (*nous*). [152]

During the *anafora* (oblation) the *synaxis* is called upon to remember Christ's sacrifice and to offer up their own 'false images' as their inner sacrifice. While the *anafora* is happening behind the *iconostasis*, the assembly are exhorted by the Deacon, 'Let us stand firm; let us stand [fearlessly] in the midst of fear'.[153] The end of the journey is near and the supplicant must not drift from the path, but 'he must be resistless and resolute'.[154] The assembly say the Nicene Creed together as a symbol of faith to stand firm and not to set up false gods. Shortly afterwards, the Lord's prayer is said with faith in God's authority on earth, his power to sustain daily and to forgive trepasses (irrespective of the clash of space-time constructs). The two actions of standing firm and staying the course are analogous to the mason's work, examined in Chapter 5. He must stay balanced, his compass must stay firm at the centre and his focus must stay the course, guided by the central compass.

3.6.5 Communion of the Faithful: naos, synaxis and dome

151. Hawkes-Teeples (2011, p. 28) notes an *'important difference between the liturgy celebrated in fifteenth-century Thessalonika and the modern Byzantine liturgy is the practice regarding the doors of the sanctuary. In these commentaries, Symeon refers to opening and closing the doors during the pontifical divine liturgy. In most contemporary practice, the doors remain open for the entire pontifical service until shortly before communion. The doors are re-opened soon afterwards for the communion of minor ministers and the laity, and they remain open until the end of the Divine Liturgy.'*

152. Cabasilas (p. 67) links this moment with Sophia, *'This wisdom is not known to this world (that is, to the worldly-wise), who can concieve of nothing greater or higher than the knwoledge of material things, and cannot believe in the existence of a higher wisdom. It is in this wisdom that the priest asks us to open all the doors- that is, our mouths and ears.'*

153. *'Στῶμεν καλῶς· στῶμεν μετὰ φόβου'* (Papakosta 1950, p. 98) With respect to Archim. Lash' translation, *'Let us stand with awe; let us stand with fear;'* (Chrysostom 2011, p. 44), I have ventured to translate as, *'Let us stand firm; let us stand [fearlessly] in the midst of fear;'* given that the word καλῶς literally means 'well' and the word μετὰ, according to Liddell and Scott (1889), has the meanings: A.WITH GEN. *'in the midst of, among'*. In the English language, this conveys the firm faith required to recite the creed and Lord's prayer.

154. Dionysios (1897, EH V, p. 203). Cabasilas (pp. 67-68) uses a metaphor from the mason's experience, 'Let us stand firm on this profession of faith, he seems to say, lest we should be thrown off our balance ...'

During the *anafora*, between the two professions of faith, the Creed and the Lord's Prayer, the bishop or priest says audibly, 'Take, eat, this is my body...' and the assembly respond, 'Amen'. Then he says, 'Likewise after supper he also took the cup, saying 'Drink from this, all of you. This is my blood ...', and the people respond again, 'Amen' (Chrysostom 2011, p.45).[155]

Then giving voice to the spiritual communion that is in process, the priest echoes the words of St. Paul,

> And grant that with one voice and one heart we may glorify and praise your all-honoured and majestic name, of the Father, Son, and Holy Spirit, now and forever, and to the ages of ages. (Ibid. p.49) [156]

With these words, 'of one voice and heart' a unifying presence of the divine person is promised within the collective body, whose healing light dispels the 'pain body' of the community as well of the individual.[157]

After the Lord's Prayer, the priest or bishop brings the communion bread and chalice through the central door of the *templon* (the veil of the iconostasis screen).[158] This dramatic movement from the *mysterium* into the *naos* shifts the liturgical presence into that part of the church that Maximos calls the body, and highlights the union of the two spaces. This brings the communion to the assembly on many levels. There is a highlighted sense of presence under the unifying architecture of the dome.[159] There is an 'eloquent juxtaposition of the liturgical chalice and the cupola of the Byzantine church' (Lidov, 2015, p. 82). The words of St. Paul that, 'you are all one in Christ Jesus' (Galatians 3:28), is given an intangible but physically perceptible presence when the Priest brings the divided bread and chalice out into the body of the assembly. Maximos the Confessor makes

155. *'Λάβετε, φάγετε, τοῦτό μού ἐστι τὸ σῶμα'; 'Ἀμήν'; ''Ομοίως καὶ τὸ Ποτήριον μετὰ τὸ δειπνῆσαι, λέγων· "Πίετε ἐξ αὐτοῦ πάντες· τοῦτό ἐστι τὸ αἷμά μου"'; 'Ἀμήν'.* (Papakosta 1950, p. 110-112)

156. *'Καὶ δὸς ἡμῖν ἐν ἑνὶ στόματι καὶ μιᾷ καρδίᾳ δοξάζειν καὶ ἀνυμνεῖν τὸ πάντιμον καὶ μεγαλοπρεπὲς ὄνομά σου, τοῦ Πατρὸς καὶ τοῦ Υἱοῦ καὶ τοῦ Ἁγίου Πνεύματος, νῦν καὶ ἀεὶ καὶ εἰς τοὺς αἰῶνας τῶν αἰώνων.'* (Chrysostom 2011, p.49) (Papakosta, 1950, p. 126)

157. The expression 'pain body' was first coined by the Christian mystic Eckhart Tolle. See: Tolle, E. (1999) *The Power of Now.* London: Hodder and Stoughton

158. Through the central opening in the iconostasis the assembly can get a glimpse of the altar in the inner sanctum. When the priest, bishop, or archbishop moves through the opening from mysterium to the naos he is framed by the doorway, making him a living figure in the church's iconography. According to icon-historian Richard Temple, meditation on icons guides a person to move between his or her outer and inner life, in the same way that Jesus offered himself as the door, *'Christ says: "I am the door; by me if any man enter in, he shall be saved, and shall go in and out." (John X, 9) and in Psalms we read, "The Lord shall preserve thy going out and thy coming in."'* (Temple 2001, p. 135)

159. See Fig. 24 for the associations given by Maximos and Symeon to the parts of the church, and also Chapter 5 on how the masonry dome, brings together the diversity of its forms and materials around a single focus.

this point in his *Mystagogia*,

> 'For all,' it is said, 'had but one heart and mind.' Thus to be and to appear as one body formed of different members is really worthy of Christ himself, our true head, in whom says the divine Apostle, 'there is neither male nor female, neither Jew nor Greek, neither circumcision nor uncircumcision, neither foreigner nor Scythian, neither slave nor freeman, but Christ is everything in all of you. It is he who encloses in himself all beings by the unique, simple, and infinitely wise power of his goodness. (Maximos 1985, MT I, p. 187)

He compares this confluence of persons, the *ekklisia* in communion, to a divine human being where,

> ... the holy church is like a man [*anthropos*] because for the soul it has the sanctuary, for mind it has the divine altar, and for body it has the nave. It is thus the image and likeness of man who is created in the image and likeness of God. (Maximos 1985, MT IV, pp. 188-190)

As before, Maximos seems to describe a longitudinal basilican church, but his metaphors describe a domed geometry; the figure of Foucault's analogy.

> Maintaining about himself as cause, beginning, and end of all beings which are by nature distant from one another, he makes them converge in each other by the singular force of their relationship to him as origin. (Maximos 1985, MT I, p. 186)

It is helpful to understand how Maximos brought together this moment in the liturgy with architectural form, in order to resolve some of the thorny issues about Christ's human yet divine person. During his lifetime (580-662), he was the subject of five Byzantine emperors, saw several patriarchs come and go, saw the rise of Islam and the fall of Syria, Jerusalem, and North Africa to the Arab caliphs. Amid this, with a unifying zeal, he centred his theology around Christ, the *logos*, and the mysticism of the Eucharist. Perhaps to reconcile conflicting dogmas such as whether the Trinity is God's *hypostases* (persons, revelation), or *ousia* (being), Maximos framed his *Mystagogia* in spatial and architectural terms similar to Dionysios the (pseudo) Areopagite. His *Mystagogia* starts with God at the centre, then further on he describes the *ekklisia* with Christ at the centre,

> As the centre of straight lines that radiate from him he does not allow by his unique, simple, and single cause and power that the principles of beings become disjoined at the periphery but rather he circumscribes their extension in a circle and brings back to himself the distinctive elements of beings which he himself brought into existence (Maximos 1985, MT I, p. 187)

At the close of his chapter, Maximos returns God to the central position,

> Thus it has been said, the holy church of God is an image of God because it realizes the same union of the faithful with God. As different as they are by language, faith, and customs, they

are made one by it through faith. (Maximos 1985, pp.187-188)[160]

Of course there is no objective 'image of God' in either the Torah or in Orthodox Christianity. Maximos uses the words *typos* (τύπος) meaning imprint, and *eikon* (εἴκων) meaning likeness of something which is known since the human being was made in the 'image of God'.[161] As he returns the *ekklisia* to God, one must conclude that the position in the centre of the radiations to and from the circle is God's singular place.

The writings of the 4th century St. John Chrysostom did ascribe a central place to 'You and your only begotten Son and Your Holy Spirit', surrounded by angels within sacred space, when he encouraged his readers to, 'Think beside whom you stand, with whom you are about to call on God - with the Cherubim' [Homilies 4.408–409]. (In: Gerstel et Al. 2018, p. 205). If we are to imagine moving our viewpoint from above to the side, the unitary central point may be seen as an elongated vertical ray, that 'chain between heaven and earth'.[162] It could be located as the central vertical axis in the centre of the *naos* between the dome and *omphalos*. One may locate a range of states along this vertical ray, from the lowest point where the human sleeps in his cave mesmerised by sensory information, through all the steps of an anagogic ladder, to union with a transcendent God at the highest point. It is perhaps with this point of view that Hagia Sophia's interior architecture, seperated by grey stone cornices into a lower, a middle, and an upper zone, can be compared with Dionysios' three choirs of angels and the topography of icons, which we shall examine in the next Chapter 4. For this reason, Christ's agency, as guide within the human being, acquires importance as *typos* and *eikon* of God.

The communion that was brought out into the *naos* is for the assembly to 'partake of' (μεταλαβόντες, take communion of) the 'heavenly and life-creating, awesome mysteries of Christ'.[163] As we look towards the door through which the priest or bishop has brought the communion bread and wine, we see behind him are three windows in the apse with One light entering (see Fig. 27). We look up and we see twelve windows with One light. The highest summit above us, the dome, is unitary and simply above everything as an upper room (see Fig.

160. Note: Dionysios did not place the human being in the centre of the circle of creation in his *Mystagogia* or any other writings.

161. *'How and in what manner is the church an image and figure of God?'* (Maximos 1985, MT I, p. 186) *'Πῶς τε καὶ ποίῳ τρόπῳ εἰκών ἐστι καί τύπος Θεοῦ ἡ ἁγία Ἐκκλησία'* (Ibid. MT I)

162. The image of the chain, reformulated by Foucault in his first similitude, was used to link heaven and earth in early Christian theology having come, for them, through the philosophy the neo-Platonists, through Pythagoras and their Orphic lineage (the Golden Chain). Seen as both an imprisoning chain and the links drawing the human being up out of the well, Dionysios' reformulation of it as a light Ray emphasises its salvific property.

163. *'ἐπουρανίων καὶ ζωοποιῶν, φρικτῶν τοῦ Χριστοῦ μυστηρίων'* (Papakosta, 1950, p. 146)

23).[164] On the horizontal axis, at the second level comprising the great arches, the apse and upper galleries, the church's various parts combine into one space (see Fig. 26). This second level can be compared to the *nous*, the realm of analogy and cognition. To reach the uppermost realm of sympathy, all the antipathies generated as the 'clash of space-time contrasts' must simply be surpassed by going 'above mind'.[165] The message offered to our five outer senses is that the sacramental bread and wine have been divided into many pieces among many persons, but as the body and the blood of Christ, our beloved, the reality is they are one. We are required to accept the unity in everything, and this according to Dionysios is 'knowing above [beyond] mind' (ὑπέῤ νοῦν γινώσκων).[166] As if to seal this realization with a sensory experience, the faithful are invited by the priest or bishop to come forward and take communion.

In the Orthodox church the communicant literally tastes a spoonful of sweet, fortifying wine from the chalice, and eats a chunk of bread received from the hand of the priest. At the end of the journey of sequestering the senses, of surrendering one's personal desires, and of staying the course with focus, one realises that there is no apophatic negation of the senses. Dionysios reminds us that the Christian mystagogy includes the senses,

> God is accessible to sense no less than to intellect: God is known both through knowledge and through unknowing. And of him there is both intellection and reason and knowledge and touching and sense-perception and opinion and imagination and name and all other things; and he is neither thought nor spoken nor named. (Dionysios 1897, DN VII.3, 872A)[167]

The senses are fully active in tasting a communion that sustains physically and spiritually, as the Lord's prayer promised. These same senses were earlier sequestered only to entrain them with the intuitive mind and with that existence 'beyond mind'. This tasting of the communion gives the message that the senses

164. Foucault's fourth similitude of sympathy suggests this figuration when he writes *'alone remains alone'* (2002, p. 28). Hence my point that the masonry structure resolves this *'gnostic gulf between God and the world'* by converting form into energy; it brings the weight of the dome (the unified, uppermost level) securely down to the ground through the mind (second level) and finally through the senses (ground level).

165. Dionysios (1897, MT I: III, p.90) often translated by Rev. J. Parker as 'above conception'.

166. In terms of architecture the dome also becomes typos and eikon by analogy. The space under the dome unifies three levels in the vertical axis, marked in Hagia Sophia by marble cornices (cosmetes). This is the people's space within the naos with the following symbolic signifiance, *'For Dionysios as for Plotinus, then, sense, discursive reason, and intellection represent different points on a continuum of degrees of unity in the apprehension of reality. We can know and thus possess or be united with being most multiply by sense, in a more unified way by discursive reason, and in a more unified way by still by intellection.'* (Perl 2007, p. 91 / Loc. 1492 of 2602)

167. The clause continues: *'And he is not any of beings, nor is he known in any of beings. And he is all things in all things and nothing in any, and he is known to all from all and to none from any.'* (Dionysios 1897, DN VII.3, 872A).



FIG. 41 Above: Looking up into the dome, the 12 arched windows, circular balcony cornice, and mosaic define an 'upper room'. The column capitals around the naos look like the trees in the mosaic, blowing in a strong wind. The naos is designed to be cool and breezy, but glass is now fixed in the upper windows, preventing proper airflow. Photo by author.

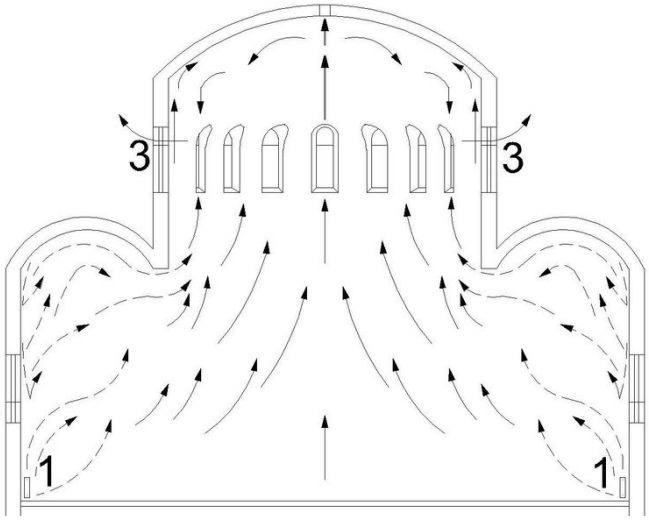


FIG. 42 Mid left: Digramme of air movement inside a domed orthodox church with side aisles, with the dome windows open. Source: Kochev, Kirill et al. (2020, fig 1).

FIG. 43 Below: Candles and sacramental Censer. Available from: https://www.tampaorthodox.org/images/2016/candles.png [Accessed: 26 August, 2020]



are really part of this union, this *henosis*, and their sequestering was a stage in the mystagogic method of the liturgy. Analogous to this, the mason in Chapter 5 will align with his material by heart and by touch so that he can build without the interference of 'false images' or impossible design expectations.

The Orthodox Liturgy does not actually end with the communion, since it retains all the essential parts of the early pre-Nicene liturgies that we saw earlier in this chapter. The final stages of the liturgical ladder of ascent are also the grounding of the assembly in the present moment, by invoking the Holy Spirit and expressing thankfulness with praise.[168]

3.6.6 The Holy Spirit; Light and Air as interior - exterior connection, The poetics of the candle, Divine Immanence

The *Epiclesis* is literally the invocation or 'calling down' of the Holy Spirit (*Haghion Pneuma*).[169] Throughout its duration the Orthodox liturgy describes the activity of the Holy Spirit, 'so that those who partake of them for vigilance of soul, forgiveness of sins, communion of the Holy Spirit' (Chrysostom 2011, p. 46), and 'having asked for the unity of the faith and the communion of the Holy Spirit' (Chrysostom 2011, p. 50), and other instances.[170] The sacramental *epiclesis* comes after the *anafora* (offering up) and *anamnesis (remembrance)*, blessing and transforming the bread and wine into Christ's body and blood. Then after communion is taken, it has been ritually transferred into the persons of the assembly and the hymn is sung,

> We have seen the true light; we have recieved the heavenly Spirit; we have found the true faith, as we worship the undivided Trinity; for the Trinity has saved us. (Chrysostom 2011, p. 56)[171]

168. *'The offering of sacrifice is not only an act of supplication; it is one of thanksgiving as well...'* (Cabasilas, 1977, p. 83)

169. *'In the East, however, the culminating point of the prayer is not in the remembrance of Christ's act but in the invocation of the Holy Spirit, which immediately follows: "Send down Thy Holy Spirit upon us and upon the Gifts here spread forth, and make this bread to be the precious Body of Thy Christ." Thus, the central mystery of Christianity is seen as being performed by the prayer of the church and through an invocation of the Spirit. The nature of the mystery that occurs in the bread and wine is signified by the term metabolē ('sacramental change')'* Encyclopaedia Britannica [Online] Available from: https://www.britannica.com/topic/Eastern-Orthodoxy/Worship-and-sacraments

170. *'"Ωστε γενέσθαι τοῖς μεταλαμβάνουσιν εἰς νῆψιν ψυχῆς, εἰς ἄφεσιν ἁμαρτιῶν, εἰς κοινωνίαν τοῦ Ἁγίου σου Πνεύματος, εἰς βασιλείας οὐρανῶν πλήρωμα, εἰς παρρησίαν τὴν πρὸς σέ, μὴ εἰς κρῖμα ἢ εἰς κατάκριμα.'* (Chrysostom 2011, p. 46 / Papakosta, 1950, p. 116); *'Τὴν ἑνότητα τῆς πίστεως καὶ τὴν κοινωνίαν τοῦ Ἁγίου Πνεύματος αἰτησάμενοι, ἑαυτοὺς καὶ ἀλλήλους καὶ πᾶσαν τὴν ζωὴν ἡμῶν Χριστῷ τῷ Θεῷ παραθώμεθα.'* (Chrysostom 2011, p. 50 / Papakosta 1950, p. 130)

171. *'Εἴδομεν τὸ φῶς τὸ ἀληθινόν, ἐλάβομεν Πνεῦμα ἐπουράνιον, εὕρομεν πίστιν ἀληθῆ, ἀδιαίρετον Τριάδα προσκυνοῦντες, αὕτη γὰρ ἡμᾶς ἔσωσεν.'* (Chrysostom 2011, p. 56 /

Focusing on the human experience of the liturgy in anagogic stages, this moment is the right time for those participating in the ritual to try to connect with the Holy Spirit within themselves. The 'acquisition' of the Holy Spirit was the purpose of religious life according to the heychast monk St. Seraphim of Sarov (2019) in 20th century Russia,

> However prayer, fasting, vigil and all other Christian practices may be, they do not constitute the aim of our Christian life. Although it is true that they serve as the indispensable means of reaching the end, the true aim of our Christian life consists of the acquisition of the Holy Spirit of God. (p. 6)

The acquisition of the Holy Spirit is presented allegorically in the 9th century mosaic of Christ in *analipsis* (ascension, the 'taking up'), borne up by angels in the centre of the dome, and below him the twelve apostles between palm trees. Looking up at the *analipsis* one is reminded of that 'taking away of all beings' found in Dionysios.[172] Ten days later, at Pentecost, the Holy Spirit descended on the Apostles, all together in the 'upper room of Zion',

> And suddenly there came a sound from heaven as of a rushing mighty wind, and it filled all the house where they were sitting. And there appeared unto them cloven tongues like as of fire, and it sat upon each of them. And they were all filled with the Holy Ghost, and began to speak with other tongues, as the Spirit gave them utterance. (Acts 2:1-4 KJV)

Below this scene in the dome, the space of the *naos* is flanked by four columns with 'wind-swept' Corinthian capitals that look very similar to the palm trees between the Apostles in the mosaic above (see Fig. 29). The iconography suggests the movement of light (fire) and wind of the Holy Spirit at Pentecost.

The architectural space of Hagia Sophia, too, presents an analogy for the Holy Spirit within ourselves. The mosaic of the Apostles between palm trees is combined with twelve arched openings through which the sunlight and air are designed to enter the church. The air naturally should circulate between the highest windows around the dome, and the lowest level of windows and doors in the *naos*.[173] Air entering through the lowest level of windows and doors rises

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Papakosta 1950, p. 144)

172. *'The unions, appropriate to angels, of the holy powers, whether they should be called applications or receptions [ἐπιβολὰς ἔιτε παραδοχὰς] of the Goodness beyond unknowing and beyond light, are ineffable and unknown ... The deiform intellects, unified by these in a manner imitating the angels as far as possible - since in the cessation of every intellectual activity such a union of the deified [ἐκθεουμένων] intellects to the super-divine light comes about - hymn it most properly through the taking away [ἀφαιρέσεως] of all beings.'* (Dionysios, DN 1.5, 593BC) (Trans. Perl 2007, pp. 95-96 / Loc. 1574 of 2602)

173. I write 'should circulate' since the windows are now closed with glass and cannot function as they were originally intended, to exhaust the hot air. My analysis of air movement is based on other similar designs, since these forms were standard features in warm climates, regionally.

up through the *naos*. The warm air from the censer also rises up heavenward, its smoke revealing the air circulating in spiral movements, 'like the prayers of the faithful'. If the cathedral were to function again as it was designed to do, the warm air should exit through the topmost windows, funneling upwards into the top of the dome and then pouring down the sides of the dome collecting cooler air that sinks back into the *naos*, refreshing the entire space (see Fig. 28).

The vertical circulation of light and air unify the space, structured in three levels by the *cosmetes*, from the floor of the *naos* where we stand to the top of the dome. Thus the *chora* of the church, as a figure of Christ, the divine human (*anthropos*), becomes unified analogously to the action of the Holy Spirit. It breathes like a living temple (*empsychos naos*).[174] By analogy, the human being, making the anagogic journey from the realm of separation (asleep in the earth), through the archetypal *noetic* realms reaches, ultimately, a hypostatic union (*henosis*); he or she may also unify these three levels with the grace of the Holy Spirit, coming back down to earth in recognition of divine immanence. Paul the Silentiary, in his 6th century ekphrasis, describes the entire Constantinopolitan Hagia Sophia by these kinds of anthropmorphic metaphors. Alluding to the Holy Spirit and to the magnetism of the centre, he remarks on the breeziness of the *naos*,

> Whither am I driven? What wind, as upon the sea, has carried away my roaming speech? The center of the church, the most renowned place, has been neglected. Return, my song, to behold a wonder scarcely to be believed when seen or heard. (Mango 1972, p. 82)[175]

With a sense of wonder he poetically describes the wind turning his speech into silence. Centuries later St. Seraphim of Sarov said that even words of prayer must cease when 'the Lord God in the form of the Holy Spirit deigns to visit us',

> ... we must be completely silent, in order to hear clearly and intelligibly every word of eternal life, which He is then pleased to communicate [...] for God is a fire consuming all uncleanliness, and no one who is polluted in body or spirit can enter into contact with Him. (Sera-

174. Eusebius of Caesarea called the church at Tyre '*empsychos naos*' [Lit. 'ensouled temple']. The concept of the *'empsychos naos'* was related to the similar concept of *'empsychos nomos'* or *'empsychos logos'*. This is first known to us through fragments of Hellenistic Pythagorean texts, dated around the 3rd to 2nd century B.C. concerning the perfect king as the 'living law'. They contrast the written law which is 'nomos apsychos' (soul-less law) with the king who is 'nomos empsychos' , en-souled law. In the development of Christianity, the concept is taken up by Philo of Alexandria in the 1st century and merged with Jewish concepts of Moses as the embodiment of the law, and also refers to the Patriarchs as 'nomos empsychos'. Thereafter, Clement of Alexandria merges Greek thought and Jewish law in the Person of Christ as 'nomos empsychos' and 'logos empsychos'. See Martens, J. (1994) 'Nomos Empsychos in Philo and Clement', In: Helleman, W. ed. *Hellenization Revisited: Shaping a Christian response within the Greco-Roman world.* Latham MD: University Press of America.

175. Paul the Silentiary, verse 438.

phim 2010, p. 31)

The blessing of communion is the grace of the Holy Spirit, according to the liturgy, where St. Seraphim says,

> People saw God in the grace of His Holy Spirit not during sleep, in dreams, or in the excitement of a disordered imagination, but truly and openly ...that truth which we are now experiencing in ourselves, (Ibid. 2010, pp. 38-39). [176]

This was surely true of the 14th century Archbishop of Hagia Sophia, Thessaloniki, St. Gregory Palamas (1296-1359).[177] In the writings of this renowned hesychast, the Pentecostal fire was a central theme.[178] One can imagine that as he celebrated the liturgy in his metropolitan cathedral, the inscription on the mosaics in the centre of the dome was a daily reminder of the angel's word to Jesus' disciples,

> Ye men of Galilee, why stand ye gazing up into heaven? This same Jesus, which is taken up from you into heaven, shall so come in like manner as ye have seen him go into heaven. (Acts 1:11, KJV)[179]

176. The Philokalia records that the devotional techniques of Hesychasm, related to the acquisition of the Holy Spirit, were developed in the first centuries after Christ by the monks and hermits of Egypt's deserts, and later were continued on mount Athos. In it we can get a glimpse of Hesychast meditation on the spiritual breath through the words of Nicephoros, the 13th century Athonite monk, *"You know that we breathe our breath in and out, only because of our heart … So, as I have said, sit down, recollect your mind, draw it - I am speaking of your mind - in your nostrils: that is the path the breath takes to reach the heart. Drive it, force it to go down to your heart with the air your are breathing in. When it is there, you will see the joy that follows: you will have nothing to regret. As a man who has been away from home for a long time cannot restrain his joy at seeing his wife and children again, so the spirit overflows with joy and unspeakable delights when it is united again with the soul … "* (PG 147, 961-966: Writings from Philokalia, pp. 32-34) (Meyendorff 1974, p. 59-60)

177. Palamas had devoted most of his life to the solitary monastic path, practicing Hesychast meditation, though he had also participated in the cenobitic (communal) life in the monasteries of Mount Athos. When he was called upon to become the archbishop of Thessaloniki he rose to the occasion, and his theological writings fused Hesychasm with metropolitan Christianity. Meyendorff gives us an image of his personal presence, *"As archbishop of the great Macedonian capital, Gregory acted with remarkable pastoral zeal in most varied domains. His homilies are the best testimony to this. In the 14th century, Thessaloniki was the scene of real social revolution."* (Meyendorff, 1974, p.105).

178. Hagia Sophia's 14th century archbishop Gregory Palamas, who celebrated the liturgy under this same dome had this commentary on the Holy Spirit at Pentecost, *'When spiritual joy comes to the body from the mind, it suffers no diminution by the communion with the body, but rather transfigures the body, spiritualising it. For then, rejecting all evil desires of the flesh, it no longer weighs down the soul but rises up with it, the whole man beoming spirit, as it is written: "He who is born of the Spirit is spirit" (John 3:6, 8) (Triads II, 2 para. 9, p. 336-338)'* (In: Meyendorff, 1974, p. 113)

179. *''Ἄνδρες Γαλιλαῖοι, τί ἑστήκατε βλέποντες εἰς τὸν οὐρανόν; οὗτος ὁ Ἰησοῦς ὁ ἀναλημφθεὶς ἀφ' ὑμῶν εἰς τὸν οὐρανὸν οὕτως ἐλεύσεται ὃν τρόπον ἐθεάσασθε αὐτὸν πορευόμενον εἰς τὸν οὐρανόν.'* (Acts 1:11 Inscription on the 9th century mosaic in Hagia Sophia's Dome. (Accessed from: https://www.thebyzantinelegacy.com/hagia-sophia-thessaloniki)

The prophetic story of Jesus' ascent and descent, (represented here as the vertical axis in the central space), suggests a divine theological figure spanning between the poles of transcendence and the immanence, embodying the 'divine ray' between heaven and earth. It contains Christ's agency as the *typos* and *eikon* of God. Archbishop Palamas connected the Pentecost of the Apostles, the transfiguration of Jesus on mount Tabor, and Moses' ascent of Mount Sinai to the illuminating grace of the Holy Spirit, when he wrote the following for his metropolitan community,

> For he becomes 'one body with us' (Ephesians 3:6) making us a temple of the whole Godhead - for in the very body of Christ 'the whole fulness of the Godhead dwells corporeally' (Col. 3:9) How then would he not illuminate those who share worthily in the divine radiance of his Body within us, shining upon their soul as he once shone on the bodies of the apostles on Tabor? For as this Body, the source of the light of grace, was at that time not yet united to our body, it shone exteriorly on those who came near it worthily, transmitting light to the soul through the eyes of sense. But today, since it is united to us and dwells within us, it illuminates the soul interiorly. (Palamas, Triads I:iii para. 38, In: Meyendorff 1974, p.112)[180]

The great-hearted Palamas focused his theology on the heart and dared to speak about *henosis* and *theosis* for the public to read. According to Meyendorff (1974, p. 119), 'Palamite thought is a solemn affirmation of divine immanence in history and in man', and it 're-established the dignity of matter' in a way that does not oppose spirit to matter. His words echo those of St. Paul affirming the principle of divine immanence in the body of the individual and of the *synaxis*.[181]

In addition to the iconography and the architecture, certain sacraments remind the *synaxis* of the Holy Spirit (*Haghion Pneuma*) and the pentecostal fire (see Fig. 30). The humble candle expresses the Holy Spirit 'exteriorly', yet at the *epiclesis*, Palamas instructs us to find this 'interiorly'. The 20th century scientific philosopher Gaston Bachelard finds the poetics of a weightless verticality and a transcendence of being in his meditation upon the candle.[182] The silver censer,

180. St. Seraphim of Sarov translates this to a simpler pastoral message, *'Distribute the Holy Spirit's gifts of grace to those in need of them, just as a lighted candle burning with earthly fire shines itself and lights other candles for the illuminating of all in other places, without diminishing its own light. If it is so, with regard to the earthly fire, what shall we say about the fire of the grace of the All-Holy Spirit of God?'* (nd, p. 14)

181. *'What? know ye not that your body is the temple of the Holy Ghost which is in you, which ye have of God, and ye are not your own? For ye are bought with a price: therefore glorify God in your body, and in your spirit, which are God's.'* (1 Cor. 6:19-20, KJV)

182. Gaston Bachelard (2012) writes in *The Flame of a Candle*, regarding the verticality of flames, *'Living at the zenith of the upright object, gathering reveries of verticality, we experience a transcendence of being. Images of verticality make us enter the realm of values. To communicate with the verticality of an upright object through the imagination is to enjoy the advantages of ascensional forces. It is to participate in the hidden fire that dwells in beautiful forms, forms self-assured of their verticality.'* (p. 39) *'The flame is an inhabited verticality. Everyone who*



FIG. 44 Above: After taking communion, and after the end of the liturgy, the assembly receive and eat the communion bread. At the end of the liturgy it is called 'antedoron'.

FIG. 45 Above: At the end of the liturgy, the forecourt again becomes the people's meeting place as it must have been since the time it was a basilican atrium in the late 4th century. The assembly return to the city, through the forecourt and front gate or by side gates. The Dome of Hagia Sophia, illuminated by sun, is today covered in copper rather than traditional lead. It is the 'helmet' of the church, as the ekphraseis relate, and an image of cosmic energy being earthed from its topmost antenna to the subterranean foundations amid the waters which today flow out to the south. One can imagine the sound of the choir resounding off the walls of surrounding buildings. Photos by author.



dome-shaped and perforated, shows us a microcosm in action of the movement of air in the whole domed church, a space which we inhabit. An empathy arises between human beings and the sacraments of the liturgy, in which I include its masonry architecture, and this returns us to the essential ingredient of love which Jesus taught at the last supper. In effect, any theology which professes God to be *homo-ousios*, of the same substance as the circumscribed, invites one to a 'meditation upon matter'.

3.6.7 Doxology; Thankfulness, praise celebrated by the human voice within the dome, the connection between interior and exterior.

After communion, at the time of Cabasilas or Symeon, there was an extended thanksgiving. Now the final part of the liturgy includes a series of doxologies,[183]

> Let our mouth be filled with your Praise, O Lord, that we may sing of your glory, for you have counted us worthy to partake of your holy, divine, immortal and life-giving Mysteries; keep us in your holiness, that we may meditate on your righteousness all day long. Alleluia, alleluia, alleluia. (Chrysostom 2011, p. 57)[184]

They reiterate the essential points of the liturgy and ask for blessings upon the church, mankind, and the world. The liturgy ends thus as it began, with thanksgiving, sending the blessing outwards again.[185]

At the end of the eucharist liturgy the *synaxis* must inevitably return to the exterior world outside the church. As its culmination it gave the message to the assembly that they inhabit the space (*chora)* of the present moment through

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dreams of a flame knows that the flame is alive.' (p. 40) *'The flame is so essentially vertical that it appears, for one who dreams about existence, to be stretched towards transcendence, toward an ethereal non-existence. In a poem entitled Flame we read: "Bridge of fire flung between real and unreal, continuous co-existence of being and non-being". To play at being and non-being with a mere nothing, with a flame, and perhaps only an imaginary one at that, is, for a philosopher, a fine moment of illustrated metaphysics.'* (p. 41)

183. *'Εὐχαριστοῦμέν σοι, Δέσποτα φιλάνθρωπε, εὐεργέτα τῶν ψυχῶν ἡμῶν, ὅτι καὶ τῇ παρούσῃ ἡμέρᾳ κατηξίωσας ἡμᾶς τῶν ἐπουρανίων σου καὶ ἀθανάτων μυστηρίων. Ὀρθοτόμησον ἡμῶν τὴν ὁδόν, στήριξον πάντας ἡμᾶς ἐν τῷ φόβῳ σου, φρούρησον ἡμῶν τὴν ζωήν, ἀσφάλισαι ἡμῶν τὰ διαβήματα· εὐχαῖς καὶ ἱκεσίαις τῆς ἐνδόξου Θεοτόκου καὶ ἀειπαρθένου Μαρίας καὶ πάντων τῶν Ἁγίων σου.'* (Papakosta, 1950, p. 148)

184. *'Πληρωθήτω τὸ στόμα ἡμῶν αἰνέσεως, Κύριε, ὅπως ἀνυμνήσωμεν τὴν δόξαν σου· ὅτι ἠξίωσας ἡμᾶς τῶν ἁγίων σου μετασχεῖν Μυστηρίων· τήρησον ἡμᾶς ἐν τῷ σῷ ἁγιασμῷ, ὅλην τὴν ἡμέραν μελετῶντας τὴν δικαιοσύνην σου. Ἀλληλούϊα. Ἀλληλούϊα. Ἀλληλούϊα.'* (ibid. p.146)

185. After this, in general practice today, there is a short period of adjustment where the priest or bishop may make announcements about coming events on the liturgical calendar, perhaps a brief welcome for another dignitary, remembrance of a national event, an investiture, or anything short and more mundane, preparing us to exit the church. At the very end he stands to greet those who come to speak to him, and the remainder of the communion bread is distributed to those who wish to take some home for absent family members.

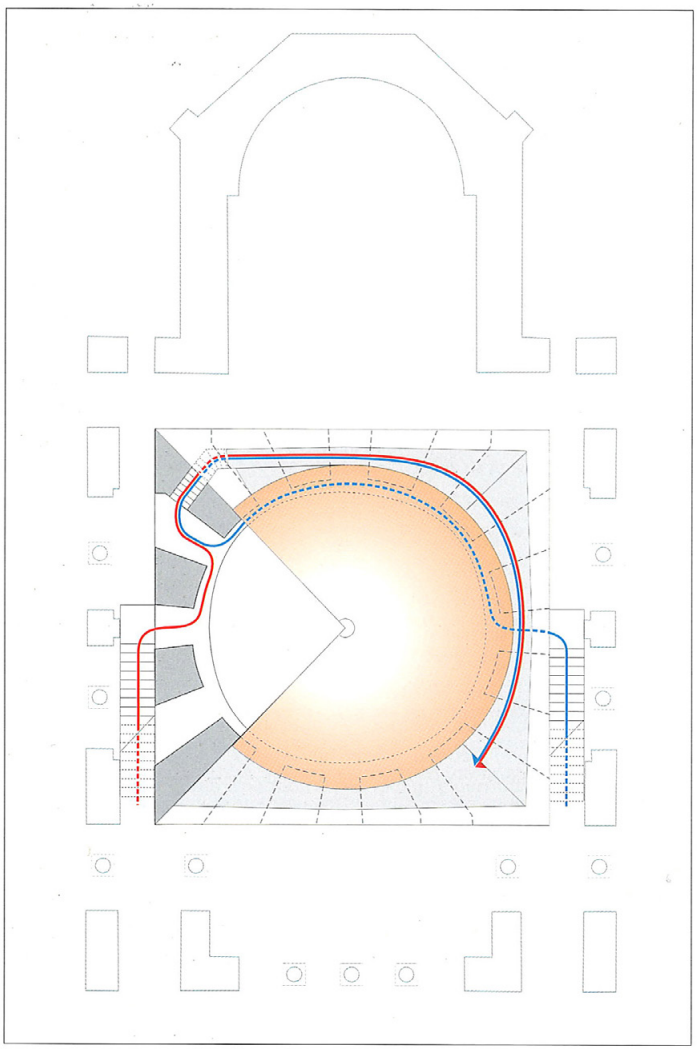


FIG. 46 Left: Diagramme of the proposed ascent up to the dome of Hagia Sophia, accessing the gallery and ascending the stone stairs within the corner of the plinth (cuboid dome buttress).

Image: Velenis (2003, fig.13, p. 92)

FIG. 47 Below: Exterior view of Hagia Sophia from the east showing the stages of ascent of the building today, including the box-shaped plinth of the dome to which the choir could ascend using the internal stone staircases, and also the cross surmounting the dome. It is thought by Velenis (2003, pp.93-97) that there may have been a lightweight canopy or ciborion above the cuboid base, as a secondary dome.

FIGs. 31 & 32 Photos by author.



love, as unity within diverse multiplicity, and that their breath contains the grace of the Holy Spirit. The assembly who will soon exit the church back through the narthex and into the forecourt, will now take with them the whole experience of sequestering their senses, of standing firm and offering up their 'vain images', of entering the realm of the intuitive mind (*nous*), of tasting the sustaining 'communion' bread and wine as a tangible unity within diverse multiplicity, and then partaking of the Holy Spirit. This recognition of divine immanence in the world naturally leads to a sense of sacramental space (*chora*) outside the church, as the *oikoumene*.[186]

One of the fruits of the liturgy is its engendering the space of *diaconia*. The mingling of ritual art and the natural world will be taken up in the next chapter on iconography. As we exit the church again after the ending of the liturgy, it is worth remembering that at one time there was much more of a dialogue between its inside space and its exterior, helping the assembly to connect their ritual experience to their day to day lives in the city.

3.7 Early relationships between the cathedral's interior and exterior.

From its construction in the 8th century until at least the 15th century, the exterior of Hagia Sophia was integrated into the liturgies. This church was the last in the empire to celebrate daily the Cathedral Rite, the *asmatike akolouthia*.[187] Its Archbishop Gregory Palamas followed by Symeon of Thessaloniki clearly appreciated its civic character.[188] The fact that these two significant pastoral theologians did not impose a reclusive monasticism, of the sort that they had

186. The end of the divine liturgy signals the beginning of the liturgical understanding of the week. It will be the time to put into practice the lessons learned from the leitourgia, the eucharistia, in the everyday life of the city. The religious tradition has many ritual reminders: The liturgies of the hours are celebrated in monasteries, and some churches celebrate the morning and evening liturgy (orthos and hesperinos). Sundays, special liturgies and cycles of prayers for feast days connect with other practices such as fasting around feast days, private prayer, veneration of icons and name days associated with saints, creating a sense of ecumenical time that weaves through the personal timing of baptisms, marriages, and funerals, as part of the daily life of the community. The church itself along with the ability to make proskynesis, light a candle, say a prayer, becomes a structure of remembrance just as much as an icon's visual structure and the icon corner in a home, mindfulness of the Holy Spirit, giving thanks over meals, travel, the home, and other events of daily life, through thankfulness and praise. All serve to help a person remember God in their everyday actions so that, by learning to act with truth through all the divine virtues (Dionysios' Divine Names) such as love, wisdom, goodness, little by little they will hear the 'Cosmic Liturgy' singing in the space of their lives.

187. See the earlier sections of this Chapter 3 (pp. 145, 147), and Chapter 1 (p. 54), regarding the *asmatike akolouthia* (ασματική ακολουθία - the Sung Office).

188. According to Gerstel et Al. (2018, p.200) *'Symeon, who presided over Hagia Sophia until his death in 1429, one year before the Ottoman conquest of Thessaloniki, describes the Cathedral Rite as "a magnificent ceremony" consisting of "well-constructed psalms and refrains," in which "nothing was recited without melody." The Monastic Rite, in contrast, is characterized as devoid of festivity and musical variety. According to Symeon, such was its lack of festivity that it was possible for a priest to celebrate the rite virtually alone—and without any singing.'*

personally chosen, on the liturgy of Hagia Sophia, tells us that they considered the cathedral liturgy capable of reconciling the 'outer' life of the city to the consecrated 'inner' life appropriately for the citizens.[189]

Today the liturgy moves through the church horizontally, though not only on the east-west axis, but also circling within the space. Liturgical commentary has naturally tended to attribute meaning to the horizontal movement in space through cathedral building and the city, while there is a theological acknowledgment of a vertical and concentric hierarchy such as we see in Dionysios.[190] Perhaps this is because the major part of liturgical development took place relative to basilican churches, before the 8th century when Hagia Sophia was built.[191] However, Symeon writes that some liturgical celebrations pre-15th century also enacted the vertical, spiral, and concentric dimension of theology. These dimensions are found in the *ekphraseis* to the conceptual church. Also, in the iconongraphy explored in Chapter 4 there is a tendency to transpose horizontal meanings into vertical space.[192] Evidence that Hagia Sophia was celebrated vertically has been pieced together from the MS Athens 2081 rubric and letters, and through Symeon of Thessaloniki's writings.[193]

In the Cathedral liturgy the outside space was celebrated on many feast days. It sent its sights and sounds out into the city beyond the walls of the church. Hagia Sophia did not stand alone as it does now, but was embedded in the urban fabric, probably attached to the Archbishop's residence and a chapel to the north, of which some fragments remain.[194] There would have been many occasions when this more lively and showy liturgy processed with choir and people through the city and ascended to the dome of the church weaving between interior and exterior (see Fig. 32).[195] One such occasion was the ritual of

189. Archbishop Symeon resisted calls to impose the more monastic forms of liturgy. Palamas, who was archbishop before him, is credited for reconciling the monastic Hesychasm with the daily liturgical and communal life, demonstrating his humility and pastoral care. Meyendorff (1974 p. 105) writes concerning Palamas' pastoral works, on *'the ecclesiastical function of monasticism and its prophetic role'* in Palamas' work and his *'solemn affirmation of divine immanence in history and in man.'* (p.119)

190. These are the relationships between the street, the forecourt, the narthex, the nave, the location of the ambo, the bema and templon, and the mysterium.

191. Although Baldovin (1987, p. 256) writes that, *'The people who lived in societies before the invention of the printing press experienced their cities vertically, by moving about their streets and walls and public places.'*

192. See the Introduction chapter to this thesis, under Chapter 3, for the authors who briefly address the vertical symbolism of the church in liturgy - Symeon, Ouspensky, and Mainstone.

193. As discussed in Strunk (1977), noted earlier in this chapter.

194. See Theoharidou, 1986, pp. 13-16

195. The most important being between Hagia Sophia and the Acheiropoeitos basilica. Actions such as these, called dromena, connect exterior and interior, making both sacred.

the feast of the cross, described in *Soundscapes of Byzantium* (2018),

> During the eve of the feast of the Elevation of the Holy Cross (September 14), which was likely the main feast of the cathedral, the so-called τάξις τῆς ἐν τρούλλῳ φήμης (order of the proclamation in the dome) ritual took place. After sunset, the cathedral's chanters and readers (anagnostai; ἀναγνῶσται), singing and carrying votive candles, torches, and wooden semandra (sounding boards), ascended to the exterior of the dome using staircases and ramps that were built into the superstructure of the main church and the cubical drum of the dome. After traversing the narrow balcony that rings the marble interior cornice of the dome, they reached the peak, where the symbol of the cross was elevated. The bishop, accompanied by the priests and officials of the episcopal see, stood on the balconies of his residence, and laymen holding candles gathered in the atrium or the courtyard to the west of the church. This service was thus celebrated with antiphonal chanting between the group of chanters standing around the dome of the church and the priests poised on the balconies of the bishop's residence to the north. (Gerstel et Al., 2018, p. 190)

Hagia Sophia was constructed to enable chanters to ascend vertically up within the building, using hidden stone stairs, to emerge up onto the dome.[196] On their way up they could access the twelve openings around the dome, and sing from the balcony inside the dome.[197] The accoustical properties of vaults, domes, and apses, would have been well known to both Byzantine masons and clergy.[198]

Gerstel et al. in *Soundscapes of Byzantium* (2018) describe the Festal Trisagion 'chanted during (and perhaps composed for) the liturgical procession and raising of the cross above Hagia Sophia's dome' at the feast of the Holy Cross; [199]

> The sound of this and other chants would have resonated through this section of the city, with the church itself serving as a monumental ambo supporting the singers. Held in dark-

196. For the architectural formation of the dome and its built-in staircases and ramps, as well as the route through the dome that the chanters followed during this annual service, see Velenis 2003, pp. 87–94.

197. Framed by the windows, it must have looked as if they were in the company of the Apostles, Mary, and the four archangels depicted in the dome mosaic, perhaps in the 'upper room of Zion'.

198. Vessels and spaces in the art of sound projection had been documented from the time of Vitruvius, and may have been employed in the liturgies of Hagia Sophia. See Vitruvius (1914) *The Ten Books of Architecture* V:V. 'Sounding Vessels in the Theatre'.

199. Referring to the manuscript analysed by Strunk mentioned earlier in this chapter, Gerstel et Al. (2018, p.191) write, *'A tantalizing rubric in a musical manuscript, MS Athens 2061, provides a clue about what might have been chanted during this particular ceremony. Copied in Thessaloniki between 1393 and 1425, this codex contains three settings of the so-called festal Trisagion. [...] The festal Trisagia, on the other hand, were most likely chanted in churches throughout the empire on September 14 for the feast of the Holy Cross. ... In fact, one of the three festal Trisagia in MS Athens 2061 is described as Thessalonikaion (Θεσσαλονικαῖον, from Thessaloniki) and melos anabastakton (ἀναβάστακτον, a composition for the "raising up"/"lifting"). It is likely that this specific Trisagion composition was chanted during (and perhaps composed for) the liturgical procession and raising of the cross above Hagia Sophia's dome.*'

ness, the ceremony must have had an otherworldy appearance and sound." (Gerstel et al, 2018, p. 190-191)

If one were to imagine being among the faithful, standing on the floor of the *naos* beneath the dome, while antiphonic chanting is going on with the choir high up on the balcony within the dome, there would be a sense of pulling the two ends of the space together. When sympathy echoes from every direction of the space, neither the chain of *convenientia* or the echoes of *emulatio,* nor even analogy can define the experience. This would have created an 'immersive experience' through sound, and through all the senses, like a unification of angelic and earthly realms and a tangible experience of the 'divine ray' of Dionysios' theology. It would have enabled the whole space of the dome, upper, lower, inner and outer, to be experienced by the synaxis as a single unity. In such an event, the architecture plays a significant role in mystagogy, as a sacrament.

3.8 Conclusions drawn from this study of the liturgy

Archbishop Symeon alludes to the cathedral typifying Dionysian theological hierarchy but defers to others more qualified to explain,

> The priests beginning the divine songs of praise from within the sacred sanctuary depict the first orders surrounding God. The deacons, together with the lectors and cantors, taking up according to the [correct] order the divine psalms and the sacred writings manifest the middle chorus of the heavenly beings. The whole people who are of correct disposition of soul concerning the faith joins with the singers appealing for the mercy of God. This group represents the last order ... These things. too, the temple typifies, even though it is possible for those who have recieved from God the power of contemplation to percieve [in it] things even greater than these. (Symeon, 2011, II:25, p. 97)

Using both fieldwork and texts, my study of the Eucharist liturgy has described a number of key ritual experiences which relate to the theology of the time. It shows that the liturgy is an analogy for the theology (*theoria*) as well as being a method of induction (*mystagogia*) into divine union (*henosis*). It was, and still is, a lesson that is designed to be repeated many times in a person's life, in order to take effect. As ritual, its form is analogous to a person's own transformation, yet it is not that transformation; the person must do the real work themselves in their own life.

The following is a summation of the liturgical stages which we shall see reiterated in Chapters 4 on Iconography and Chapter 5 on Masonry, as similar stages of mystagogy.[200] It starts with the God that is beyond all and ineffable, with the one-ness of God; Christ as the beloved offspring; the unity of the three

200. See Fig. 2, Table 1

hypostases - Father, Son, and Holy Spirit; followed by God's munificence in Creation, and the agency of the divine human being as a template of creation. As proof of concept, there are then readings from the Gospels of the instructive stories of Jesus' life, with reminders of God's compassion and healing. This theology, set out at the start of the Eucharist, was theoretical at first and without a way to comprehend, reach, or taste that which it describes. Then, for 'the initiated' who aspire to enter the sacred *chora*, a space was circumscribed within the unknowable, in which to focus on a figure; this is the space of the divine and human (Christ), the space of angelic hierarchies, of divine names, of analogy and the space of the physical sacraments.[201] To enter it at the Great Entrance required acknowledgement of our broken-ness, the weight of our own heart, repentance, humility, and supplication. We were asked to sequester our bodily senses, and withdraw them from the world, to reserve judgement and keep an open mind. After the Cherubimic hymn and then during the *anafora* behind the *iconostasis* we were asked to go beyond the five outer senses, from discursive reason to intuitive perception, to traverse the full breadth of the *nous* (mind). We were required to stand firm while reciting the Lord's prayer and Creed. At the limits of the *nous* (mind) the divided bread and wine were presented as one by sacramental change (*metabolē*); the diversity of people were one; the three hypostases (the Trinity) were no longer three but one 'without composition or confusion and a distinction without separatiion or division' (Maximos 1985, MT XXIII, p. 205). Thus we were asked to go above and beyond the mind as a process of unification. Through complete acceptance and empathy we were asked to move into the state of *anenergesia* (doing while not doing), that of working while resting, as Christ did on the Sabbath. The tasting of the communion bread and wine reminded us that in this unitary state, the senses and the mind are fully operational, and the person does not disappear but is fully present. The Holy Spirit (*Hagion Pneuma*), like the reverberation of the entire cathedral when the chanter hits the right note, unifies these three states as the action of God in us, for which we give thanks.

The anagogic stages of the liturgy describe a journey from the incomprehensible transcendence of God to the intimate immanence of God and, inspired work that it is, it simultaneously sets out mystagogic steps from the blind attachment to earthly things to the heart and summit of union with the Holy Spirit.[202]

My fieldwork sought out the relationship between the Eucharist liturgy and

201. Dionysios' calls baptised Christians 'the intitated' througout his Ecclesiastical Hierarchy.

202. We will see this same pattern happening in Icons in the next Chapter 5, see Temple (2001, p. 79).

the theologies of Dionysios the (pseudo) Areopagite and Maximos the Confessor. Dionysios describes the motion up and down a hierarchy yet circling a centre in his written works. When we use affirmative language to describe God by comparison with what we know the motion is away from the single core of divine potential. Simple principles like the divine names, reflect God more closely, yet we need ever more complex language to describe the mutiple facets of created beings which we percieve with our outer senses. This moves us down the hierarchy of creation, each being either like or unlike the simpler principles from which each unfolds. Each stage of the hierarchy is a reflection of the one above it, and is reflected in the one below it, by analogy. Dionysios describes this movement as downward (*kataphatic*, meaning 'down-spoken'). The upward movement from creation to the source (the One) consists of denials, that God is not like this or not like that. This process of stripping away attributes is called *apophatic* (meaning 'away-spoken'). It is the same movement from centre to perimeter and back, between outer and inner, that we have just seen in the 'procession and return' of the liturgy. We moved from the diversity of secular life in the city, through the Entrances into the sacred inner *chora* of the church with its unitary centre, and back out again in *diaconia*. It is this simultaneous movement of expansion and contraction, and of upwards and downwards, that propels a person from the realm of the *nous* (mind) to the state of 'knowing above mind' and *anenergesia* (doing while not doing).

During the liturgy we have seen the church used horizontally from west to east, narthex to mysterium; and the horizontal cross axis to north and south, female and male; and vertically from the *omphalos* to the summit of the dome; and circular movement around the church in procession, by incense, and by air movement.

Maximos too, as we have seen, describes the *ekklisia* using both circular and linear movements, both horizontal and vertical, as well as dialectical oppositions. In *Mystagogia* Chapter V, after describing 'five opposing pairs', such as contemplation and action, he describes how these 'ten divine strings of the spiritual lyre' generate the dialectic which moves the mind to the limit of its motion,

> The mind [*nous*], he used to say, arrives at contemplation [*theoria*] when it is moved by wisdom [*sophia*], by contemplation to knowledge [*gnosis*], by knowledge to enduring knowledge, by enduring knowledge to truth [*aletheia*]. It is here that the mind finds the term of its movement, for in it are included essence [*ousia*], potency [*dynamis*], habit [*hexis*], and act [*energeia*]. (Maximos 1985, MT: V, p. 192)[203]

203. His reference is to Psalm 143 (144):9 'O God, I will sing a new song to thee: I will play to thee on a psaltery of ten strings.' (Brenton's Septaguint, 1844, CXLIII v. 9)

Maximos then relates skill-based wisdom (Sophia) and the mind, and these 'ten divine strings' by 'the science of divine things' (Ibid. p. 195) generate 'perpetual and unceasing movement'.[204] 'Its final term is the good, where ceasing its movement, the reason rests (Ibid. p. 193). This movement leads to the transcending of these aspects of the mind to arrive at truth (*aletheia*).[205] In this there is a mystagogy, since 'faith without works is dead', and a person's active participation is required.[206]

The writings of these two theologians, combined with the liturgical commentaries of St. Symeon of Thessaloniki, have shown how the ritual interacts with the church's architecture as a coherent pattern of theological and philosophical figures of cognition. One can recognise Foucault's four similitudes of *convenientia*, *emulatio*, analogy, and sympathy, in the stages of the liturgy. Maximos open his *Mystagogia* with the figure of the radii of a circle converging on the centre. This too is the figure of analogy, illustrating God's relationship to the created order and the Church's relationship to its members as unity within diversity. In the 'like' and 'not like' of analogy, the germ of its dialectic moves the mind to the limit of its motion where it touches the essential sympathy that is 'beyond mind'. 'There is achieved a union that, though profound, does not confuse the beings joined, but preserves their integrity', writes Louth (2004, p. 111) commenting the *Mystagogia*.[207] The culmination of the liturgy brought this chapter to an example of sympathy from Bachelard, as that leap of a candle flame bringing us to the 'continuous co-existence of being and non-being. He humbly presents a daydreaming poet who inhabits a candle as an 'illustrated metaphysics'. The flame is 'an inhabited verticality' bringing a 'transcendence of being' that feels like being suspended from above and beyond, the way the masonry dome is described in the *ekphrasies* to the Hagia Sophias. Sympathy, or empathy, brings the poet into communion with the sacramental candle, its weightless verticality like a 'bridge of fire flung between the real and unreal'.[208]

204. *'Now he used to say that wisdom is a potency [power in potential] of the mind and that mind is wisdom in potency, that contemplation is a habit [holding pattern], that knowledge is act [energy in action], that enduring knowledge of wisdom, contemplation, and knowledge, i.e., of potency [dynamis], habit [hexis] and act [energeia] is the perpetual and unceasing movement toward the knowable which transcends knowledge whose term is truth, the ultimate knowable.'* (Maximos 1985, MT: 5, p. 193)

205. Aletheia (ἀλήθεια) truth, etymologically breaks down into a- (not) -letheia (from λήθω, λανθάνω, escape notice, be unaware of, forget).

206. Maximos (1983, p. 193) is referencing James 2:17, 'Thus also faith by itself, if it does not have works, is dead.' (NKJV)

207. *'God realizes this union among the natures of things without confusing them, but in lessening and bringing together their distinction, as was shown, in a relationship and union with himself as cause, principle, and end.'* (Maximos 1983, MT: I, p.188)

208. See my footnote #111 above for the Bachelard references.

These feelings are more than just the daydream of a poet, they connect us with the ancient principles of making and doing known in the 8th century as *techne* or *poesis*.

3.9 Summary of how the liturgical stages translate as masonry methods on the masons anagogic path.

A brief conceptual summarization of the liturgy's sequencing, independent of the details, has helped to structure the following section with masons' interviews. In the next Chapter 5 it will also help to help mediate its translation into the category of iconography.

1) The focus on the senses; the outer symbols apprised through the five outer senses and with the thinking mind; the exterior parts of the building and the narthex.

2) Creating focus on the heart; the concept of a perimeter which circumscribes the uncontainable (analogy, *theoria*); the walls and entrances.

3) Rejection of limited perceptions; the process of repentance and sacrifice, an open mind, an attitude of humility and love (*mystagogia*); the lowest level of the building, the *naos*.

4) Opening the intuitive mind; standing firm in the process, the offering (*anafora*); the second, mid-level of the building, the movement between *naos* and mysterium across the *iconostasion*.

5) Union of the quiet mind to the heart's communications; a truthful union, communion, the taste of unity (*henosis*); the uppermost level of the building, the mysterium.

6) The stability of this union; the continuous connection of the senses, the mind, and the One God (through the heart), the grace of the holy spirit (holy breath), giving thanks; the connection of all the levels and parts of the building, inner and outer.

This chapter looked for points of connection to translate between the liturgy and architecture of Hagia Sophia Thessaloniki, with reference to Dionysios' and Maximos' theology. The following pages summarise certain anagogic stages in the liturgy matching them with with the experiences of living masons (see the selected interviews in appendix A) as they learn and perfect their craft.

The liturgy guides the assembled people through a sequence of concepts

using tangible experience in time, within the *chora* of the church building.[209] In Chapter 5 I will analyse how masons undertake an essentially similar sequence of concepts through the construction methods of a domed masonry building. No one can say whether the particular masons who build Hagia Sophia consciously espoused such an anagogy, however, the methodology chosen by this thesis attempts to uncover the points of translation and thereby open up a conversation as to their possibility.

Regarding the process of forming a community with the liturgy's guidance, and that of the masons who build together,

> ... because the project we were dealing with was cooperative, it means that people's relationships, that is, the groups that we made were very, how shall I say it, very useful, very instructive. Because you make a small society to go ahead with a project. It makes you grow as a person very much [...] You are three months there to build a house, and pass the time, you feel like it's a lifetime, you go through a whole history. Its very beautiful. (Kyriakogonas interview, Appendix A, Boulouki 2)

The liturgy begins with the declaration of the one-ness of God, and this is reiterated at the start of the Creed, and in the Our Father. The masonry construction begins with divine intention that sets a central stake in the earth.[210] This central point is reiterated at the point of the dome's summit far above, and at the invisible geometric centre of the dome midway. In plan, all three centres are at the same point. In section, they are all on one line, one above the other.

The liturgy continues with God's circumscription in Christ, with the Holy Spirit, three as one, and God's generosity and love in creation. The ineffable God came humbly down to earth to the limits of creation, to the world of the senses, symbolised by the two Entrances: of the Gospels and Bishop, and of the Eucharistic Gifts, the bread and cup. Any limit brings the immeasurable and limitless into focus. The masons circumscribe the space of the *chora* within infinite space and set out the walls generated from the central point. This brings the mind to focus within the space.

> Now, about centering oneself/the focus ... I ... there is God. You make a prayer in the morning to God to be good, to help you do the stonework well, the house, but actually the time that I am working, eight hours, I'm very focussed on the work. It's ... as if you go to a psychologist called "occupational therapy" ... in stone. (Triantafyllos interview, Appendix A, Boulouki 4)

The liturgy seperates the faithful into the *naos* and sequesters the senses at

209. In addition to Chapter 4, see Appendix C: Table 1, The Pre-Nicene Liturgy of Hippolytus

210. See Chapter 6, pp. 241-243

the Great Entrance. The psalms describe the heaviness of a repentant heart. For the *synaxis* repentance comes with a return to earth within the perimeter walls, a humbling realisation of where one stands. For the masons there is heavy labour to build up the perimeter walls that will enclose the faithful, the same walls that rise up enclosing him and his men. The mason literally 'comes down to earth' digging foundations, carrying the load of earth, stone, bricks, and mortar as his repentance. For example, Master mason Tarnanas (2018) described how it turned around his teenage rage,

> It has changed me a lot. In my character, when I started to work with stone, I was not at all civil. I was wild, I fought with people, if you bothered me a bit! By working, it changed my character and I became so calm that I cannot fight with any man anymore, whatever he says to me! (Appendix A, Bouloouki 5)

Master mason Kyriakogonas (2018) observed the direct relationship between the weight of the stone and discord in community as well as within a person,

> When we feel that there is tension in our relationships and something goes wrong, that's when the stones get heavier, and you have no desire to lift them at all. (Appendix A, Boulouki 2)

In the liturgy the remembrance of the suffering and sacrifice of Christ are followed by the offering up (*anafora*) of the bread and the wine to God. The assembled people, too face their own pain and offer up their prayers symbolised by the flame of the burning candle and the smoke of the incense.[211] They offer up attachments and vain images born of limited sensory information, accepting that a greater power is in charge and keeping an an open mind and heart for God's compassionate logic. The mason offers the work of his hands and ceases to impose his desires on the earthen materials, but humbly listens to where the stone and bricks want to go. According to Master mason Triantaphyllos (2018),

> ... afterwards with this work you do change (become), you feel (see) as if you are closer to the earth, with earthliness, with the stone. [...] you learn to work with this material and you have to become one with it, you have to listen to it. You have to be a friend with this material and you have to listen to it ... when it goes "tak-tak" under the hammer, you have to hear how it is working inside. You do not just do it mechanically, like another job in the building trade. You have to be one with the material. [...] these craftsmen who have done good things must love it (the stone). You must be beyond work. It must be like your girlfriend, the stone is your friend. You should think about it at night. In the morning when you wake up. (Appendix A, Boulouki 4)

211. See Chapter 4, p. 131

Just as the priest offered up his hands and prayed not ot be himself but to let the Divine power perform the action of *anafora* for the communion of the *synaxis*, so the mason must also offer up his hands to God through the gravitational force which must guide every brick to its correct place in the construction of a dome.[212] This offering of the masons' hands, achieved through sacrifice and love is the masons' *anafora*. It allows the 'image' within the earth to come forth as the structure of arches, vaults, and domes; a unity of form and material. The masons touch Bachelard's 'images of matter, images that stem directly from matter. The eye assigns them names, but only the hand truly knows them.' (Bachelard, 1999, p.1)[213] There is a communion of the message of the senses and the message of the heart, which is the masons' communion with the earth. Recognising the same communion between the seen and unseen world, the *synaxis* can understand their unity as a community. That which is experienced with the five outer senses, and that which is beyond their limit, are acknowledged as one.

This brings the masons an empathy for the landscape and the earth,

> When I find myself in a place/landscape/topos which has stone buildings, I think that I am one with the place/landscape/topos. (Tarnanas 2018, Appendix A, Boulooukі 5)

> I need to build to feel good, I need to be in touch with the earth's materials. (Salvador interview, Appendix A, Catalan 1)

The liturgy sequesters the senses and removes the person from their familiar territory. Then at the end it returns them into the same territory, but with the Holy Spirit in a state of inspired rest. Masonry architecture does the same. It pushes the mason beyond their comfort zone doing hard labour and then after the mason learns to listen to the earthen building materials, the mason's hands are guided.

> The builder himself knows what the stone wants. Yes, you see it yourself in your mind's eye, beyond gravity, where the stone should sit, you must have a feeling for it. [...] I do not think of anything, for very many hours. It cleanses my mind completely and I am completely focussed there on the stone. (Triantafyllos 2018, Appendix A, Boulouki 4)

All masons, including those who built Hagia Sophia, are guided by the gravitational pull of the central point and led into a state of 'doing while not doing' (*anenergesia)*, while building the repeating arches for vaults, and the spiral motions for domes. They return to a state of rest while performing the same work as at the start, and their product is *acheiropoeiton* (made without hands).

212. See pp. 180 & 183 for the comments of two archbishops: (Symeon, 2011, p. 131) and (Kantiotes 1986, p. 50).

213. See Chapter 5, pp. 221-222.

When asked whether the stone became lighter as the mason becomes one with his work, Triantafyllos (2018) replied,

> This has happened many times! [...] until thirty years old, maybe not. But after that I bonded (fell in love) very much with the stone. And every building that I did, I saw what you are saying, you rise up spiritually. That is, I was like ... I loved it so much, as if it were my child. This elevates you very high. I did not think of it as work. When I take a stone and I work with gravity, with the gravitational force to build a building. (Appendix A, Boulouki 4)

Far from being exhausted at the end of a project, Catalan Master mason, Salvador (2019) remarked,

> ... it is something that I notice when I am making a vault, I know where and how to place it [the brick] just by seeing it. [...] Yes, the vast majority of my work, when I finish, they [the bricks] seem lighter. (Appendix A, Catalan 1)

According to Master mason, Kyriakogonas (2018) this feeling of connection, once attained, could also return off the building site,

> ... every time one makes something, that feeling becomes even stronger for me. I feel closer, that is. [...] from the feel of stone and the clay at that time, there is the moment when you sit and take a break, and it is next to an oak tree, to a carob tree. There, perhaps from fatigue, perhaps from the landscape, maybe ... I do not know what happens, but there are moments that are very intense, extremely beautiful, that you feel a real connection. [...] Because there are moments which arrive, let's say, in Athens when I'm sitting and this feeling returns, since it exists. Not for long, of course, but it does come back. It sustains you, this sustains you. (Appendix A, Boulouki 2)

Upon being asked if there is a relationship between happiness and the strength that a man has to lift the stone, Tarnanas (2018) replied, 'Yes it does. A great relationship.' And when asked about the relationship between stress and the feeling of pulling weight, he replied,

> Us … we don't know stress/anxiety. [...] If you are stressed/anxious you can't do anything. Neither does your mind work …. we don't know anxiety. The stone guides us to be so focussed/centered, that we don't think. Neither stress, nor grief, nor …. we think only about the joy which we shall feel when we put that stone there ... (Appendix A, Boulouki 5)

The state of *anenergesia* and the work that is *acheiropoieton* is intrinsic to masonry. The image that is latent in the earth emerges as arches, vaults, and domes, because there is no other way that it can create the space of the *chora* within gravity.

The masons integrate these concepts in their lives by their hands-on practice

of building. The masons who built the domes and vaults in Hagia Sophia's centrally planned dome-in-cross would have experienced Dionysios' three motions of the soul, wittingly or unwittingly. There is the circular movement around a central point to make a dome. This is the point that initiates the creation of the building and later becomes the omphalos marking the centre of the community. There is an experience of vertical ascension in the building, from the wide foundations below the earth to the unitary summit of the dome, while taking into account the descending of potential energy in harmony with gravity by the distribution of weight through the dome down to the foundations. There is a spiral motion as they build upwards and inwards to complete the central dome as the pinnacle of the mountain-like substructure.

Dionysios seems to be describing the domed masonry form of Hagia Sophia as he explains his mystagogic method,

> In the other case, the discourse, in descending from the above to the lowest, is widened according to the descent, to a proportionate extent; but now, in ascending from below to that which is above, in proportion to the ascent, it is contracted, and after a complete ascent, it will become wholly voiceless, and will be wholly united to the unutterable. (Dionysius 1897, MT III: 1, p.93)

The kataphatic or symbolic movement towards the 'world of sense' affirms an increasing number of qualities. Descending the building's mountain of masonry materials, it spreads proportionately into a widening base of arches, vaults, apses, columns, buttresses, and walls setting on broad foundations in the earth. The apophatic movement towards the One, abstracts and strips off attributes and qualities just as the mason building upwards proportionately reduces the number of bricks or stones in each course, until he reaches zero at the dome summit. Taken together, these two directions spiral upward and downward simultaneously, like the form of our own DNA, allowing both directions in one unity.[214]

In this thesis, in all three categories of liturgy, iconography, and masonry architecture, I have found the upward climb (anagogy) of the individual, and God's downward emanation towards creation to be simultaneous. What changes is the viewpoint. The centripetal focus of the mason spiralling inwards to the Unity of the centre has a corresponding centrifugal opening towards the base as potential energy emanates towards the perimeter of creation, apprehended though the senses. For the individual, too, after sequestering the senses in order shed their habitual sense-impressions, reaching beyond them through the levels

214. I use the example of human DNA to illustrate the form of the movement, since under the electron microscope DNA reveals a double helix. The genetic information is read in both directions, called 'divergent expression' whereby cells extract the necessary RNA for replication.

of the *nous* (mind) to the One, there is a return connecting again to the world of the senses, each time closer to the divine perspective.

For the mason the return to the senses is represented by his final descent to the ground level after completing the dome. For the assembly, this is the descent of the Holy Spirit and the *diaconia* where they return to the world outside the church after the liturgy. This constant referral up and down, inwards and outwards, like the expansion and contraction of breath, constitutes a purifying action. The repeated action removes the interference of illusion bit by bit. It clears the connection between the earthly realm of the senses and the Divine one-ness. It aligns the realm of the mind (via divine archetypes, divine names, angelic orders) to the heart, to the ineffable. For the mason, this repeated action of setting his stone and bricks in these geometrical figures leads him through the experience of analogy ('the core of cognition'), to the state of *anenergesia* (doing while not-doing or doing while at rest). It enables him to make a work that is *acheiropoeiton*, 'made without hands' and it is his path to union with God at the 'intangible centre' of the chora, the space of radiations. In this way through 'masonry, method, and analogy', there can be 'Unity within Diverse Multiplicity'.

4.0 ICONOGRAPHY: ITS RELATIONSHIP TO MY CASE STUDY CHURCH OF HAGIA SOPHIA

4.0 Introduction

Icons are the visual images which are distributed over the walls of Byzantine churches. They are also portable images, often painted on wood, that set up a miniature space for prayer when a person cannot be inside a church. Houses of traditional Orthodox Christian families have a corner for icons as a place of orientation for contemplation, and where votive candles are also lit.

This chapter comprises an introduction to the essentials of Byzantine iconography, followed by an overview of its place in Orthodox churches, an analysis of their mode of operation as physical techniques of representation, and as images within the person in contemplation. The theological debate which led to acceptance of the visual image as a sacrament is followed by a description of the mosaics in my case study cathedral of Hagia Sophia Thessaloniki. Analysis of their more abstract aspects yields how theology and philosophy give the icon a spatial hierarchy, and how astronomy and cosmology translate into their seemingly natural topography; it is from this background that the figurative scenes emerge. These are presented as *mystagogic* similarly to the ritual of the liturgy. I begin to consider how this iconic topology maps out the building of Hagia Sophia, in anticipation of the following chapter on masonry architecture and its symbolism.

At first glance iconography seems to lend itself more to contemplation, as *theoria*, than to the discipline of *mystagogia*. This is a bit deceptive because to reach an acceptance and understanding of the icon as a pure body of light (its theoria - θεωρία), requires *mystagogia*. Fortunately, there is a *mystagogia* in the guidance given by the icon's intellectual map; it leads one's mind wordlessly to move through the senses, through its own cognitive structure, to beyond itself. The icon is sensory but leads beyond the material upon which the image is imprinted to connecting the vision of the eyes with the divine light apprehended by the heart.[1]

In its materiality, a Byzantine icon is a graphic notation of ideas. It is not a picture in the sense that we understand a photograph or a painting. It is a way of communicating using a graphic medium rather than a verbal one, because

1. Veniamin (2014, p. 126) quotes Maximos' theology of the Transfiguration as, *'the light of the invisible secret which appeared to the sense is a symbol' because it could not be contained by the power of the eyes, so likewise 'God surpasses every power and operation of the intellect'.* Veniamin sums up, *'the divine light of Christ is nevertheless perceptible to man, even if only in an imperfect manner'.*

its subjects cannot easily be expressed by words. The perennial theme of the icon is the human being's place in the cosmos but to make a comparison, when we make a map of a country, we would think it absurd to insist on putting that map exclusively into words. The icon has developed a form of graphic notation that is comparable to a maritime chart or a set of building plans. With a notation such as a halo the seen could indicate the unseen world.[2] Just as 'the firmament was a cosmological keystone that marked the boundary between heaven and things beyond the heavens', the icon (and the icon screen) is 'a boundary between the sensible and the intelligible' (Constans, 2014, p. 214-215).

To put it another way, orthodox icons are rather like those maps of the stars where the positions of the constellations are overlaid with rather sketchy naturalistic figures as a mnemonic. Yet they are more complex than this, since the naturalistic image is also a vital part of their identity. Belting (1994, p. 101) writes, '"The physical presence" that such an image conveys to us is counterbalanced by the immaterial "appearance" that distinguishes the person represented.'[3] He writes that in icons,

> 'The paradox inherent in the religious image of making visible the invisible seemed to be validated in cases where images legitimated themselves as receptacles of God or a saint, that is, by revealing the direct intervention of heaven. The difference between the image and what it represented seemed to be abolished in them; the image was the person it represented, at least that person's active, miracle-working presence, as the relics of the saints had previously been.' (ibid. p. 47).

The identity between a holy Person and their image in the world ('the unsullied images of virtue in souls of the same pattern' as God), is summed up by 'the truth is shown in the likeness, the archetype in the icon [εἴκον]. Each in the other with the difference of essence.'[4] The identity of timeless cosmic archetypes

2. Ouspensky (1992, p. 174)

3. Similar representational techniques can be seen in the portraits of Roman wall paintings, but most especially on the death shrouds of Hellenized Egypt, from Fayuum. The deceased persons 'gaze' from the 'other side' transmitting a sense of divinely inspired connection; they become mediators to the unseen world. The painter must have sought in his memory and in his heart for the image of the beloved person now 'on the other side'.

4. Dionysios, In: Barber (2002, p. 108) Barber writes that this excerpt from Dionysios was used in the defense of icons, however it is worth noting the whole passage: *'For the hidden comeliness of God is unsullied, and is sweet beyond conception, and manifested for spiritual contemplation to the intellectual alone, through a desire to have unsullied images of virtue in souls of the same pattern. For by looking away from the undistorted and well imitated image of the Godlike virtue to that contemplated and fragrant beauty, he thus moulds and fashions it to the most beautiful imitation. And, as in the case of sensible images, if the artist look without distraction upon the archetypal form, not distracted by sight of anything else, or in any way divided in attention, he will duplicate, if I may so speak, the very person that is being sketched, whoever he may be, and will shew the reality in the likeness, and the archetype in the image, and each in each, save the difference of substance; thus to copyists who love the beautiful in mind, the*

and the image of a holy Person is also apparent in their lifetime in the body. [5]

So the naturalistic image is a part of the icon but at the same time, as Ouspensky writes of the church, 'Its Art, in particular, does not resemble the art of the world' (1992, p. 30). Through the abstract and figurative techniques of iconography, one can contemplate the angles of theology and philosophy, astronomy and cosmology, landscape and biblical stories, and approach them holistically with love through the holy persons of Christ, the Holy Mother, the saints and with their prophetic lives. According to Temple (2001, p. 179), 'it is not icons themselves that we study so much as their meaning. Icons exist to convey the highest cosmological, philosophical and theological ideas.' The movements of the stars and planets is translated by analogy into recognisable, naturalistic figures of a landscape and prophetic actions.[6] Icons include narrative sequences that serve the stories first and then the naturalistic image; they may show the same person twice at different times or doing different things, or use un-natural sizes or locations to convey meaning. The technique of representation 'known as "εἰκονισμός", or delineation' (Barber, 2002, p. 108) enables the painter to present all these angles simultaneously. As notations of prophetic, instructive stories, their narrative sequences serve the theology by mapping such prophetic scenes onto the Dionysian hierarchy which, despite its similarity with neo-Platonic cosmology, was situated within Christian theology.[7] This reinterpretation and transformation of old forms into new content, can be compared with the slow and conscious transformation of the old basilican churches into cross-domed types; material was not discarded, but everything was reconfigured.

Icons provide a notation of theological figures, such as the abstract form of a centre and a perimeter, a cross or a wheel with radiating spokes, or a chain of causality from the heavens to the earth and on to the abyss. In the Introduction chapter these figures were compared with Foucault's four similitudes, along with the problem of seperation between the world of ideas and the world of reality in his fourth similitude of sympathy. An example of resolution was given with Abba Dorotheos of Gaza on the love for one's neighbour, and addressed

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persistent and unflinching contemplation of the sweet-savoured and hidden beauty will confer the unerring and most God-like appearance.' (Dionysios, 1897, EH, p. 219).

5. St. Luke is said to have painted the Virgin in her presence and after her death.

6. See Temple, R. (2001) ***Icons and the Mystical Origins of Christianity,*** Oxford: Luzac Oriental Ltd. ; and De Santillana, G. & Von Dechend, H. (1969) ***Hamlet's Mill: An Essay Investigating the Origins of Human Knowledge and Its Transmission Through Myth***, Boston: Gambit.

7. See Ouspensky and Lossky, 1983, p. 59 ff. for an explanation of some of the icon types and their placement on the iconostasis. Pelikan (pp. 86-86) describes a cycle of twelve feasts including the annunciation, nativity, baptism, transfiguration, resurrection, ascension, pentecost and so on.

by the mystagogy of orthodox theologians such as Maximos the Confessor. In iconography the love for the Holy Person must be added into the picture for contemplation of an icon's abstract philosophical figures to open the mind to different levels of perception, between the mind, body and heart, between body and soul, and those different levels of being through which the meditator must travel to reach *henosis* (union with God).

For all these reasons icons never look realistic. Their realism emerges in one's imagination, or in *chora*.[8] To make a comparison, the Hebrew scripture does not include letters for vowels. The breath of the speaker must inhabit and animate the text. Byzantine icons work when their images live in the beholder. Ouspensky (1992, p. 48), after quoting John of Damascus writes, 'Therefore, if we comprehend the spiritual through the words which we hear with our carnal ears, contemplation with our carnal eyes likewise leads to spiritual contemplation' (Ouspensky, 1992, p. 48).[9] For Christ, the Virgin, apostles and saints, whose person and prophetic actions in their lifetime conformed to divine archetypes and energies, their image and their reality are one and their energetic trace is still working in the universe. The beholder offers the image to the realm of the heart which percieves the light of divinity with the grace of the Holy Spirit. The person of the true saint is a 'true image', eternally connecting the 'sensible ' (sensory) with the 'intelligible' (unseen energetic world), teaching the beholder to connect the image seen with the eyes with the image seen with the heart. The icon offers a guiding chart for a person's inner life because it has been developed through a tradition of artists who have already taken the same path of contemplation. An icon painter faithfully copies the guiding chart for others under a Master icon painter who has already completed the journey.

The tradition of iconography that we inherit today reached a stable form during the 9th century. It became an integral part of both liturgy and architectural space, whose method has now been tried and tested over many generations. Following in this chapter is a deeper look at the system of allegories and analogies that the icon transmits, with reference to its method of transmission.

8. 'According to the words of Jesus Christ Himself, His Church is a Kingdom "which is not of this world" ... its art in particular dos not resemble the art of the world.' Ouspensky, (1990, p. 12)

9. This is the full quote from John of Damascus: *'Thus the apostles saw with their carnal eyes God who became man, Christ. They saw His passion, His miracles, and heard His words. And we too, following the steps of the apostles ardently desire to see and to hear. The apostles saw Christ face to face because he was present corporeally. But we who do not see Him directly nor hear His words nevertheless listen to these words which are written in books and thus sanctify our hearing and, thereby, our soul. We consider ourselves fortunate and we venerate this image by lifting ourselves, as far as possible, beyond this physical appearance to the contemplation of divine glory.'* (Oratio III, ch. 12, PG 94:1333, 1336; In: Ouspensky, 1992, p. 98)

4.1 How Iconography relates to Byzantine Churches:

4.1.1 The Topology of the *Chora*

The last chapter on liturgy ended by considering the *diaconion* that is experienced at the end of the liturgy when the assembly return out into the world.[10] The *diaconion* unites the inner space of the church with the outer space of the city and the landscape, defining the *oikumene*.[11] It is a physical analogy for a person's inward and outward vision reconnecting, as promised in Maximos' *Mystagogia,* effecting an 'unconfused unity'. It unifies the 'spiritual and sensible world', the soul and the body through 'the grace of the Holy Spirit which is always invisibly present', whose 'grace transforms and changes each person who is found there'.[12]

The enclosed space of the Orthodox Church is one of the few still able to bring a sense of the sacred into the human lifespace today, 'a "copy of the cosmos", the Byzantine church incarnates and at the same time sanctifies the world' wrote anthropologist Mircea Eliade (1959, pp. 62-63)[13] As we have seen in the last chapter, to archbishop Symeon it represents 'what is on earth, what is in heaven, and what is above the heavens.'[14] Iconographer Leonid Ouspenky refers to 'the explanations of the symbolism of the church and the liturgy by the holy patriarch Germanos of Constantinople' and to Symeon, concluding that 'All the paintings in the church are arranged in accordance with this symbol-

10. My use of *diaconion* here emphasises its meaning of 'extending from one place to another, pervading', more than the common understanding of 'ministry, service' from διάκονος - an attendant or minister. According to Strong's dictionary of New Testament terms (1999 edn.), the word διάκονος, διακονου, ὁ, ἡ, is of uncertain origin. It is not a compound word beginning with the preposition διά (whose α is short), because in διάκονος the α is long. Therefore its root is likely διήκω - pervade, extend or reach from one place to another; or διώκω - to make to run, set in quick motion, to pursue a person, to attach oneself to, or be a follower of a person.

11. 'The inhabited world', see Glossary for *oikoumene*.

12. See Maximos' Ch. 24 (1985, p. 206) summing up his argument in the Mystagogia, and my references to it in Chapter 3 of this thesis on liturgy.

13. See Eliade, M. (1959) ***The Sacred and the Profane: The Nature of Religion.*** Translated by W. R. Trask. New York: Harcourt, Brace and World. The following is Eliade's extended text: *'The interior of the church is the universe. The altar is paradise which lay in the East. The imperial door to the altar was also called the Door of Paradise. During Easter week, the great door to the altar remains open during the entire service; the meaning of this custom is clearly expressed in the Easter Canon, "Christ rose from the grave and opened the doors of Paradise unto us". The West, on the contrary, is the realm of darkness, of grief, the realm of the eternal mansions of the dead, who await the resurrection of the flesh and the Last Judgement. The middle of the building is the earth. According to the views of Kosmas Indikopleustes, the earth is rectangular and is bounded by four walls, which are surmounted by a dome. The four parts of the interior of the church symbolise the four directions.'* (Eliade, 1959, pp. 62-63)

14. Symeon (2011, p. 91) *Explanation of the Divine Temple, Ἑρμηνεία περί τοῦ θείου ναοῦ,17:7*

ism.' (1983, p. 60)[15] (see Fig. 8) To 'sanctify the world' as a sacred place was not only the work of the liturgy but also that of iconography, in the multi-lingual Byzantine Empire. Eliade coined the neologism 'hierophany' to describe 'an irruption of the sacred that results in detaching a territory from the surrounding cosmic milieu and making it qualitatively different' (Eliade, 1959, p. 26). To better describe the effect of icons in 'the creation of sacred spaces' through 'the formation of spatial imagery' art historian Alexei Lidov coined the neologism *hierotopia* (Lidov, 2015, p. 62) as complementary to Eliade's *hierophany*. Eliade illustrates hierophany with 'story of the Jacob's Dream about the Ladder' connecting the Earth and the Sky' [heavens] following which Lidov's 'hierotopic project starts with the waking up of Jacob, who, inspired by his dream-vision, begins to make a sacred space, which would convert a particular place into "the house of God and the gate of heaven"' (ibid. 2015, p. 63) (see Figs. 21, 22). But the sense of terrain, or landscape in *topos* has not seemed to me sufficent for an architectural study.

For this case study of Hagia Sophia this thesis uses the noun *chora* for the 'irruption of the sacred', because the active verb, *chor(e)o*, means 'to make space', 'to open up a place' in a substrate[16]. Nicoletta Isar's ground-breaking articles on 'the Byzantine chora' call it a 'synthesis of Christian theology and anthropology ... and platonic metaphysics and mysticism.'[17] She explains, 'For the Byzantines, the space designated by the term *chora* was the matrix of the incarnated word, the most sacrosanct presence in Christianity celebrated in the holy icon, and the sacred space of liturgical participation' (Isar, 2009, Vol. 1:1, p. 42).[18] She refers to Nikephoros I, patriarch of Constantinople (806 - 815AD) 'The icon has its specific space, which reveals the *chôra* and not the *tópos*, spells

15. *'..."the church is the earthly heaven where God, who is above heaven, dwells and abides, and it is more glorious than the tabernacle of witness. It is foreshadowed in the patriarchs, it is based on the apostles… It is foretold by the prophets, adorned by the hierarchs, sanctified by the martyrs, and its high altar stands firmly founded on the holy remains…"' (Ouspensky, 1983, p. 60)*

16. The ancient Greeks had no philosophic word for matter, and Plato's Timaeus does not use the word 'hyle' (ὕλη) when Timaeus is discussing the 'receptacle' or 'space' (Plato, Timaeus 49a-55e). 'Hyle' is, instead, mentioned as wood (Ibid. 69a) His student, Aristotle first adopted the word for 'wood', or 'the stuff of which things are made', bringing 'hyle' or 'hile' (ὕλη) into Philosophy (Arist. Ti.Locr.93b). See Liddell and Scott entry for ὕλη.

17. *'In the history of the Platonic chora, there is an interesting case of appropriation of the term, which has not been enough discussed from the perspective of the Platonic dialogue itself. This is the Byzantine chora - a most fascinating synthesis of Christian theology and anthropology, on the one hand, and Platonic metaphysics and mysticism on the other.'* (Isar, 2009, p. 42)

18. *'The visibility of the Byzantine chôra becomes the subject of a most intense debate around the definition of the icon, discussed by Nicephoros the Patriarch of Constantinople specifically in terms of iconic space chôra. The icon has its specific space, which reveals the chôra and not the tópos, spells out Nicephoros, when he applies to the verb ekchôréô in order to speak about the iconic inscription (graphè)'.*

out Nicephoros, when he applies to the verb *ekchôréô* in order to speak about the iconic inscription (*graphè*)' (Isar, 2004, p. 64). Nevertheless, the root of both words *topos* and *chora* share a sense of a place marked off from surrounding space.[19] Such places are configured in the psyche (soul) of the person, in a way that is not bound by their physical location and physical time, yet the physical location is a part of their identity. If you like, the physical location points the way to a *topos* or *chora* in the imagination, a defined place in the psyche, which moves with the person and can appear again in another time and physical place. [20]

The active aspect of *chora* was an ontological concept in Plato's *Timaeus*, and became a key aspect of neo-Platonic philosophies.[21] However, it was transformed theologically first by Philo of Alexandria, for whom both the *chora* and the substrate in which it is opened were created by God from his own being.[22] Then St. Dionysios the (Pseudo) Areopagite whose influence on Christian iconography is immeasurable further transformed this *chora* such that it was not only God's creation from his own being, but also his being in eternal movement.[23] Finally,

19. *'Christ, taking on a body, is circumscribed in space (topos), but by virtue of his divine nature, he is outlined in and on circumscribed space, abstract and infinite, in chora. The icon generated by the iconic inscription (graphe) has its specific space which reveals the chora and not the topos, for which the Christian theorist of the holy image applies to the verb choreo...'* (Isar, 2009, p. 4)

20. This other place and time, though linked to the physical landscape of the Holy Land, was firmly rooted in 'heavenly' archetypal realms as defined by prophesy.

21. *"And there is a third nature, which is space, and is eternal, and admits not of destruction and provides a home for all created things, and is apprehended without the help of sense, by a kind of spurious reason, and is hardly real; which we, beholding as in a dream, say of all existence that it must of necessity be in some place and occupy a space, but that what is neither in heaven nor in earth has no existence. Of these and other things of the same kind, relating to the true and waking reality of nature, we have only this dreamlike sense, and we are unable to cast off sleep and determine the truth about them. For an image, since the reality, after which it is modelled, does not belong to it, and it exists ever as the fleeting shadow of some other, must be inferred to be in another (i.e. in space), grasping existence in some way or other, or it could not be at all. But true and exact reason, vindicating the nature of true being, maintains that while two things (i.e. the image and space) are different they cannot exist one of them in the other and so be one and also two at the same time."* (Plato 2013, pp.183-185) For the Greek text see Timaeus 52 b-c, In: *Plato VII*, 1929, LOEB p.122-124)

22. The adjustments by Philo and by Christian theology were to remove any hint of confusion that there might be a pre-existing substance (*hyle*) at the time of Creation. Though Plato does not use the word 'hyle' in this sense, his student Aristotle did. Thus it became necessary for popular religion to clarify that all of creation came from the One God, and that all other states were emanating from that single source. *"Consequently when Philo speaks of the creation of the idea of void, he means that the idea of Plato's "receptacle" or "space" was created and hence Plato's receptacle or space itself was also created. We thus have in Philo a clear, though indirect, statement that the Platonic "receptacle" or "space," that is, the matter in which the world was created, was itself created by God. When that "receptacle" or "space" was created, God also created in it what Plato calls "copies" or "shapes" or "traces" of the ideal four elements, that is, the matter from which the elements and hence the world were created."* (Wolfson, 1962, Philo Vol. 1, p. 308)

23. According to Curcic (2010, p. 7) Dionysios was 'of marginal importance' to the main theological debates of his time, yet he 'became the backbone of Byzantine aesthetics'.

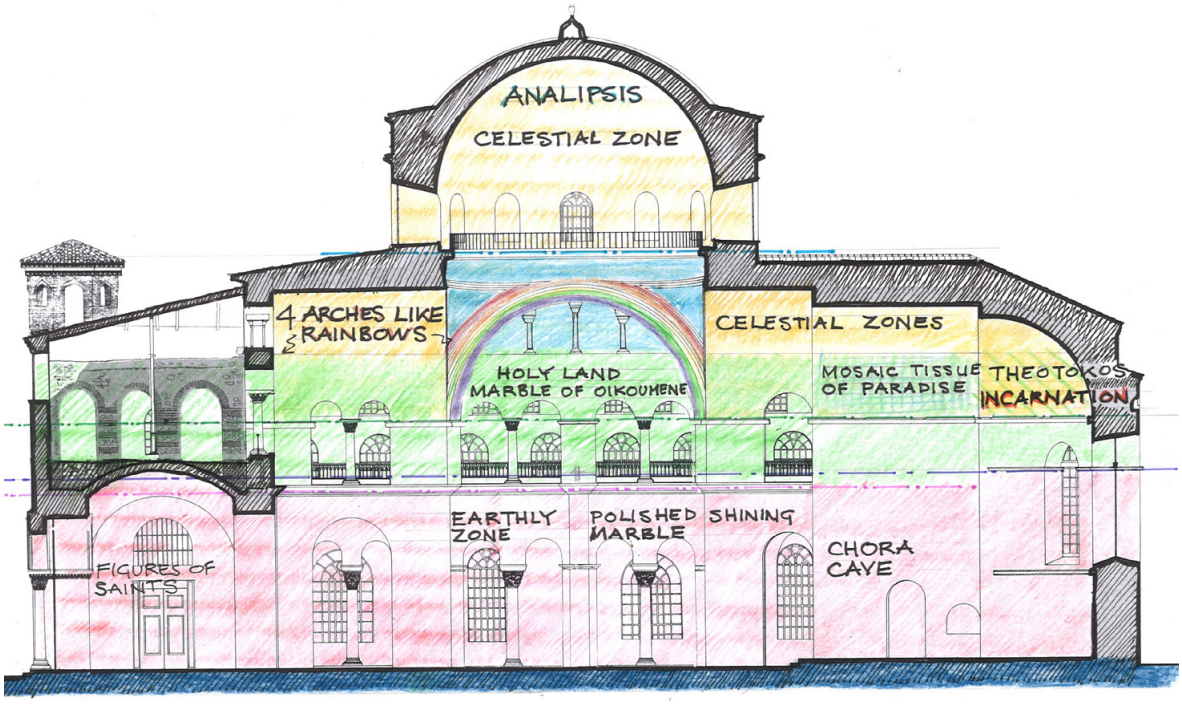
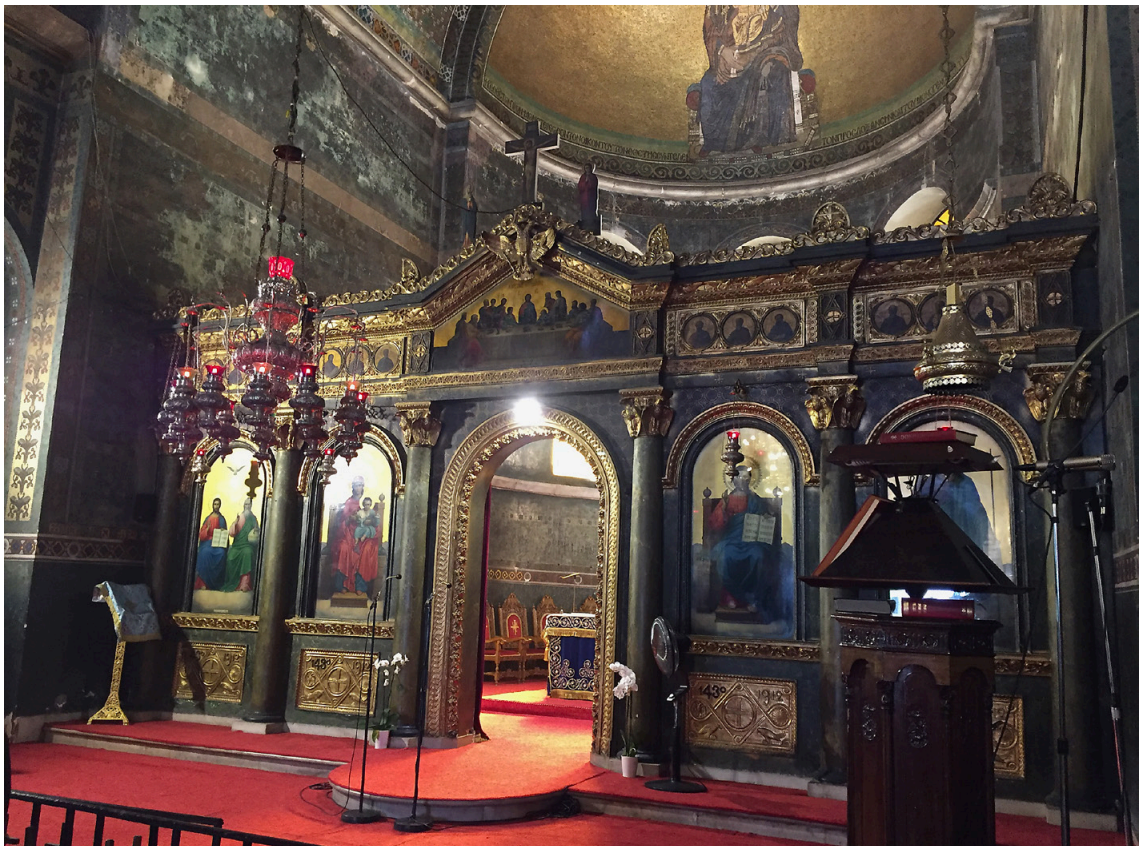


FIG. 1 Above: Long (West-East) Section of Hagia Sophia, Thessaloniki, showing horizontal cornices defining the space in layers using Demus' system (see p. 13).
Source: Survey drawing by Theoharidou (1994), annotations by author.

FIG. 2 Below: Iconostasis screen veiling the mysterium (sanctuary). The icon of Christ is to the right and the Holy Mother to the left of the Royal Door (central door), where polarities unite. Note the cornice (cosmitis) of the type that Symeon described as 'the bond of love' between the heavenly and the earthly. *Photo by Author*



during iconoclasm, the 'Byzantine Chora' was further delineated in John of Damascus' theology. 'One can say that according to him, the place of God and the holy bodies are to be conceived as a sacred space where God's energies become manifest' Isar writes of him, 'In such a place, the Aristotelian separation between body and space is not operative, not "part with part", but rather the principle "whole with whole."' (Isar, 2004, p. 6) This returns the Byzantineh *chora* to the void of Genesis,

> 'And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.' (Genesis 1:2, KJV)

This silent place of God's movement is inbuilt in the icon by its apophatic techniques, as it is in all of Byzantine art. Between the icons' visual notation and the origin of the image to which it refers, we have the space of the human heart, available to the human imagination, beyond the physical church, which is nevertheless present in it. The interior of the Byzantine church, and to a certain extent its exterior, created both *topos* and *chora*, which made it repeatable and scaleable. One of the means employed was iconography. Another was liturgy which we have just explored, and another was architecture, which we will examine in the next chapter.

4.1.2 Iconography in a typical Orthodox Church, its features and techniques

The iconography of the Byzantine church, as it developed after 843, the end of icooclasm, projects a virtual *topos* and *chora*, like a picture-book or hologram, into its physical space, in way that represents its theology. The Orthodox church developed a system of iconography whose principles are repeated to this day. Figurative iconography is presented in several horizontal zones which are layered one below the other (see Fig. 1). According to art historian Otto Demus (1976, p. 3),

> This system was not purely a formalistic one; it was the theologian's concern as much as the artist's. But it's iconographical and its formal sides are but different aspects of a single underlying principle which might be defined, crudely perhaps, as the establishment of an intimate relationship between the beholder and the world of the image.[24]

The top of the domes, apses and cupolas are covered with 'heavenly' radiant gold mosaics, or stars on dark blue. Figures are limited to abstract crosses, or the holiest persons of Christ and the Holy Mother (*Theotokos*) (see Figs. 8, 9, and 17). Below this, until about the 10th century, the walls were clad with polished

24. The reader may be more familiar with Bachelard's work in the philosophy of science and poetics, whose entire effort is directed towards a conscious intimacy between the *reveur* (day-dreamer) and the image.



FIG. 3 Above: View of the church from the upper gallery showing the three zones of the space according to Demus. Note the placement of the iconostasis and thre three cosmites in the space. In the centre of the floor is the omphalos, and to the left of the naos is the ambo. Photo by Author

marble revetments, presenting the sacred landscapes of the *oikoumene*, amongst other metaphors.[25] When these were discontinued, figurative iconography then presented the sacred landscape overlaid with prophetic stories from the gospels, which sometimes extend up into the squinches and lower parts of domes and cupolas (see Figs. 6, 7). The lowest earthly zone featured marble revetments or saints and holy persons, seeming to stand among living persons.

The iconographic images covering church interiors were never created as independent pictures, according to Demus. The relationship of images to each other and to their architectural framework was both theological and cosmological (see Figs. 1, 8, 18).[26] Hagia Sophia, Thessaloniki was constructed before figurative iconography was permissible, nevertheless these layers exist by the design of the church and in the grey marble cornices (*cosmetes*) (see Fig. 3). The principle of the *cosmitis* on the iconostasis, was described by Archbishop Symeon of Thessaloniki as that which distinguishes yet unites,

> "The columns on the iconostasis represent the firmament, dividing the spiritual from the sensory. Therefore the κοσμίτης (transom or horizontal beam) denotes the union through love between the heavenly and the earthly." (In: Ouspensky, 1983, p. 60)[27]

When Hagia Sophia's figurative mosaics were added, their narrative gave a theological face to a pre-existing structural order developed in the formal features of the Transitional churches.[28]

According to Demus (1976, p. 15) there are three simultaneous interpretations of the topology within a Byzantine church: an 'image of the Kosmos', an image of 'the places sanctified by Christ's earthly life', and an image of 'the fes-

25. Mainstone (1988, p. 219) refers to the imagery which Paul the Silentiary's *ekphrasis* draws out of the architecture and its mosaics and marble, as *'the beautiful firmament of the roof'* with *'its rounded expanse sprinkled with dancing stars'* and *'the fresh green hills below'* [the marble revetments] where there are *'flower-bordered streams ... and the green tendrils of the vine'*.

26. This quality of *'the Byzantine chora'* has further spatial implications, *'This dynamics of vision reveals not only how space and movement were conceived together in Byzantium, but also how space was experienced. Space and beholder were never detached from each other: they formed a choir. It is such experience of space that might explain the linguistic coalescence of the terms chôra, chôros and chorós. At the same time, this points out a general principle of participation in the Byzantine sacred space. Presence is participative therefore there is no presence per se, but an experienced present.'* (Isar 2009, p. 43) ,

27. Symeon continues, *"This is why above the kosmit, in the centre between the holy icons there are images of the Saviour and the Mother of God, which means that they abide both in heaven and among men."* (In: Ouspensky, 1983, p. 60)

28. See Glossary for *cosmetes*. Downey (In: Baldwin Smith, 1971, p.156, footnote 8) states that Choricus of Gaza (491-536) uses *'a literary device by which the transition from one subject to another may be made.'* These are the 'bands' of marble and stone in his oration describing the basilica-church of St. Stephen at Gaza.



FIG. 4 Above: Frescos of Saints above the narthex window of Hagia Sophia, Thessaloniki, such as Saint Theodora, are from the 11th century. These tell us that at one time the narthex and side aisles, which did not have marble revetments, may have had middle Byzantine cycles of iconographic imagery on their walls, as appropriate to the lower level (ground floor) of the church. Saints and Apostles are themselves believed to be windows to the divine light. Photo by author.

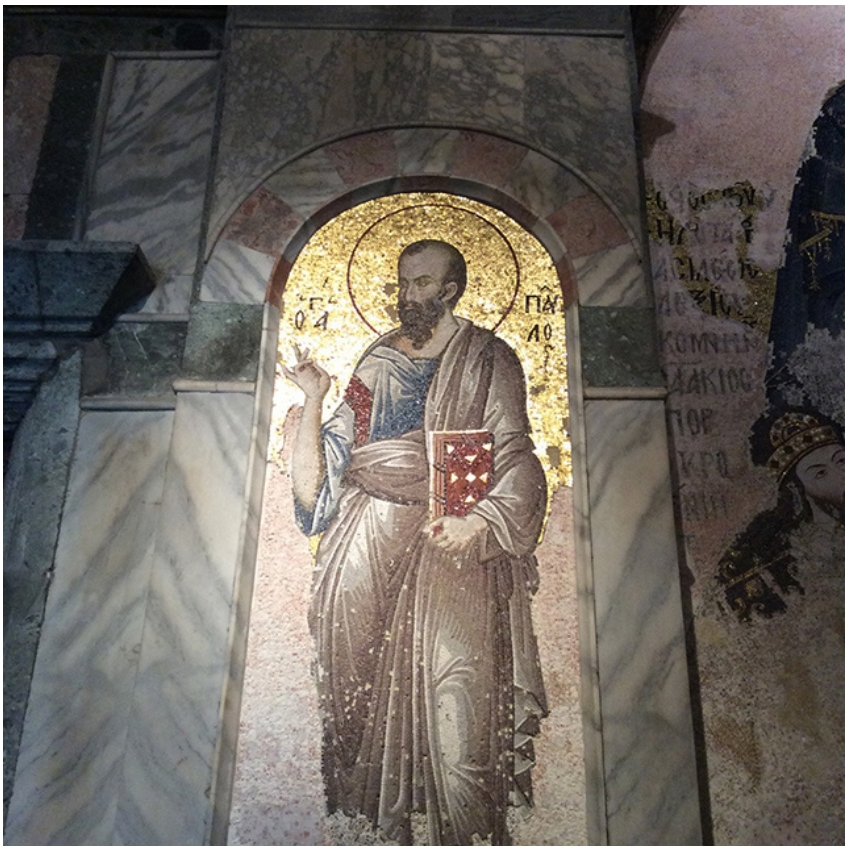


FIG. 5 Left: Mosaic of St. Paul seeming to step forward from his niche framed by marble revetments, 13th century Church of the Holy Saviour in Chora, Constantinople. This photo is added as a comparison with the middle to late Byzantine church iconographic schema in which the Apostles and saints were designed to walk among the people on the ground floor level.

Photo by author.

tival cycle laid down in the liturgy'.[29] Astronomy, cosmology, and theology were concerned with the place of the human being in the divine field of creation. Iconography notates this on the church building, as 'a copy of the Cosmos', using certain techniques which establish this 'intimate connection with the beholder'.

One stands in a space whose architectural features separate the scenes. The domes, squinches, arches, vaults, niches, and the horizontal cornices provide distinct areas while integrating them into the church's a unitary form (see Figs. 6, 7). Scenes were distanced from each other by allowing them to 'float' in a background of radiant gold mosaic, one of Byzantine iconography's most powerful representations of the continuity of divine light into the visible spectrum.[30] There is no perspective space behind the picture plane but there is the space in front of the iconic surface (painted or mosaic); it is the space of the beholder within the curves of the domes, vaults and cupolas and within the arches and niches in which a person stands. Demus believes that,

> In Byzantium the beholder was not kept at a distance from the image; he entered within its aura of sanctity, and the image, in turn, partook of the space in which he moved. He was not so much a "beholder" as a "participant". While it does not aim at illusion, Byzantine religious art abolished all clear distinction between the world of reality and the world of appearance. (Ibid., p. 4)

Through the painters' technique the image seems to project forwards from the wall. The faces and gaze of eyes are turned fully or mostly towards the humans in the church. The complete lack of shadows in the image suggests their

29. *'The Byzantine church is, first, an image of the Kosmos, symbolizing heaven, paradise (or the Holy Land) and the terrestrial world in an ordered hierarchy, descending from the sphere of the cupolas, which represent heaven, to the earthly zone of the lower parts. The higher a picture is placed in the architectural framework, the more sacred it is held to be. The second interpretation is more specifically topographical. The building is concieved as the image of (and so magically identical with) the places sanctified by Christ's earthly life [...] The faithful who gaze at the cycle of images can make a symbolic pilgimage to the Holy Land by simply contemplating the images in their local church [...] The third kind of symbolical interpretation was based on the Calendar of the Christian Year. From this point of view the church is an 'image' of the festival cycle laid down in the liturgy, and the icons are arranged in accordance with the litugical sequence of the ecclesiastical festivals.'* (Demus, 1976, p. 15) In fact these interpretations overlap but are helpful in thinking about the subject. For example, the movement and cycles of the planets determine the timing of Christian festivals connecting them to the 'image of the Kosmos'. The places sanctified by Christ's life are both earthly and cosmic and celebrated in the festivals.

30. This technique is identical to that of Greco-Roman painted pottery. It is also the technique used for charts of the stars where certain constellations are overlaid with their mythical figure, or maps of cities where the important buildings are drawn realistically in three dimensions. Also, Dividing elements might be used which were painted with cosmic notation such as a deep dark blue or a glowing red for the heavens. Red backgrounds continue the tradition of Roman and Hellenistic paintings such as the wall paintings of Pompeii. The ascribed meaning of the red heavens probably derived from the red-ochre clay colour of pottery which formed the background of the ancient Greek and Roman pottery with black figures. The black and red colours were first reversed in late 6th century Athens, while the effect of figures floating on a cosmic background remained.



FIG. 6 Above left: Middle Byzantine iconographic schema typified by the13th century Church of the Holy Saviour in Chora. The domes are for celestial persons such as this Christ 'Pantocrator' radiating from the centre. The celestial energy begins its manifestation with figures of angels, apostles or saints. Prophetic stories spread up from the earthly square of the squinches towards the celestial roundness in the centre of the dome.

FIG. 7 Below: Church of the Holy Saviour in Chora looking up in the narthex to the scene from the Marriage at Canaa in the squinch, and the figure of Christ above the central (beautiful) door to the naos. There was an image of Christ above the central door in Hagia Sophia, Thessaloniki, in archbishop Symeon's record.

Photos by author.



place is not in the physical world illumated by the sun. Instead, it is in a sacred *chora*, illuminated by an inner light (see Fig. 5). The relationship of iconography to the sacred space of the Orthodox church is succinctly described by Curcic (2010, p.101) in *Architecture as Icon,*

> It is the environment in which a union with God may be attained in the manner described in the Hymns of Symeon the New Theologian, that is, as a vision of light. This concept of sacred space in Byzantine thought, expressed in the works of Dionysios the Areopagite, was shaped by the theories of the Neoplatonists in regard to the power of human imagination to retrieve divine images from the interior depths of the soul. (Ćurčić, S. 2010, p. 101)

It is a type of reality with different rules than the one percieved by the five outer senses. The use of gold throughout the images causes light from within the human space to illuminate the figures. This is reflected by the curves of the architecture, whose focus is the geometric centres of domes, vaults, and apses, within the human space (see Figs. 36, 41).

All the above seem to pull the images into the space of the church, like a virtual reality projection. This gives the visual impression to the beholder, in the *chora* of the church, that he or she is inhabiting the same epiphanic space as the holy persons and places (see Figs. 4, 5, 6 & 7).[31]

Whether the imagery was geometrically abstract or symbolically figurative, all these techniques aim to portray images of moving light within the space. The image is seeking a resonance within the beholder through the visual sense. This follows the same principle as the sound of liturgical chanting whose resonance affects the auditory sense. In the latter, the choice of tone and rhythm has an effect through the senses to a cellular and atomic level. It can affect emotions, then thoughts, and even re-tune and heal the scattered frequencies of a person seeking the unity of God in prayer. We have seen in the last chapter on liturgy that the church, was a 'copy of the Cosmos' in Maximos' words. Summing up his *Mystagogia*, he reminds us that the church 'is a figure of both the spiritual and sensible world, with the sanctuary as a symbol of the intelligible world, and the nave as a symbol of the world of sense'.[32] It is an imprint of the cosmos of the *nous* and of the senses, or what our present scientifically-oriented language calls

31. As Clement (1960) writes, *'The liturgical word and the liturgical image form an indissociable whole—this medium of resonance, this "pneumatosphere" one could say, by which the Tradition makes present and alive the Good News.'* (Available in English translation from: https://www.thepostil.com/on-the-theology-of-the-icon/)

32. Note the translator's use of the words figure for *typos* (imprint), and spiritual/intelligible for *noetou* (of the *nous*), and sensible/sense for *aisthitou* (of the senses), and world for *kosmos*. *'Τοῦ δὲ κόσμου, τοῦ τε νοητοῦ καὶ τοῦ αἰσθητοῦ τύπος ἐστίν, ὡς τοῦ [μέν] νοητοῦ κόσμου τὸ ἱερατεῖον σύμβολον ἔχουσα, τοῦ αἰσθητοῦ δέ, τόν ναόν.'* (Maximos, Mystagogia, Ch. 24)

imagination and reality. The same goal must be assumed of iconography, that its purpose was to relate the impression of the senses and of the mind into one coherent unity within the person, while preserving the integrity of each without confusion.

4.2 Hagia Sophia's Iconography in the context of Iconoclasm:

4.2.1 The debate over the image and negotiations during iconoclasm.

For such a powerful mingling of image and reality to occur in a religion which claimed to be descended from the line of Abraham, who forbade the worship of 'graven images', a powerful justification would be required. A prolonged, intense debate raged during the 7th, 8th and 9th centuries between the *iconoclasts* (icon-breakers) and *iconodules* (icon-devotees) over what kind of images did not contravene Mosaic law.[33] This engendered a refinement of doctrine. Central to the question of portraying God was the image of Christ.[34]

In the early church the veneration of images of Christ, the Holy Mother, and other saintly persons steadily gained in popularity, so that by the 7th century the opposition to such devotional practices became particularly strong, perhaps fearing a return to the Greco-Roman religions. Emperor Leo III 'the Isaurian' moved Thessaloniki from the 'see' of Rome to the authority of Constantinople, as mentioned earlier, and in 726 AD he took a public stand against devotional images.[35] In 730 AD it became officially prohibited to include them in any space of worship, neither in the churches, the city, or processional liturgies. This started a persecution of the *iconodules* (icon-devotees) that was severe in the reign of Leo's son, Constantine V (741–775). Their imagery went through a period of private use for individual meditation, while the monks and schools of artisans who created them continued secretly in provincial parts of the empire.[36]

The main arguments of the eighth century iconoclasts concerned the truth-

33. *'Thou shalt not make unto thee any graven image or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth. Thou shalt not bow down thyself to them, nor serve them: for I the Lord thy God am a jealous God ...'* (Exodus 20:4-5, KJV)

34. Art historian Titus Buckhardt wrote (2006, p. 78), 'The Byzantine world only became conscious of all that is implied in sacred art as a consequence of the disputes between the iconoclasts and iconodules, and to a large extent thanks to the threatening approach of Islam.'

35. Though he was given the epithet 'the Isaurian' in his time, he was actually from Germanicaea in Syria.

36. In the UNESCO-protected painted churches of Cyprus at Asinou and Lagoudera in the Troodos mountains, there are such high quality interior frescos in buildings that are so tiny and humble that their icon painters are thought to have belonged to exiled schools from the capital. Fragments of painted exterior stucco which mimic the building style of Constantinople are thought to be further evidence supporting this theory (see Appendix).

fulness of the image, and also of the artist because, 'those who iconised Christ fell into a twofold error: either they claimed to have portrayed the divine nature by the icon (which was impossible) or they did not (which was heretical [Nestorian]).' (Pelikan 1990, p. 73)[37] The emperor Constantine V argument (*peusis)* against icons was that the eucharist is sufficient as an image of Christ, and a legitimate image, being 'of the same substance' (*homo-ousion*) as Christ. His original *peusis* to the iconoclast council of 754 AD at Heireia tells us that the Byzantines' had an multi-sensory attitude towards the image. The consecrated bread and wine as true symbols were 'the very body and blood of Christ' through *metousiosis* (μετουσίωσις, sacramental change), and the entire ritual was an 'image of God', through Christ. Therefore, if the eucharist is an image of Christ, there is not only the visual image but also the image conveyed by touch, by taste as the bread and wine, sound as music and words, smell as incense, and also sight.[38] The debate about the image harked back to how the *eikon* (image, εἴκων) and *typos* (imprint, τύπος) of the church, referred to by Maximos in his *Mystagogia,* could be the 'image of God'.[39] Maximos (1985) calls the holy Church 'an image and figure of God' (MT:1, p.186), and an 'image and figure of the entire world composed of visible and invisible essences' (Ibid. MT:2, p.188). The heart of the debate was defining an acceptable imprint on the senses that would not lead the Christian astray into worshipping the creation rather than the creator, but would set him or her on the path to *henosis* (unity).

Patriach Nicephoros' *First refutation*, of about 820, writes of the material difference of the icon's paint, glass, tessera, fresco, wood, from the nature of Christ or the holy person that is depicted, and also that the image is a copy.[40] Regarding the nature of Christ, Ouspensky (1992, p.125) writes that, 'Chalcedon makes a very clear distinction between nature on the one hand, and person or hypostasis on the other. It is precisely this clarity which is lacking in iconoclastic thought.' He continues,

> The icon does not represent the nature, but the person: Περιγραπτός ἄρα ὁ Χριστός καθ᾽

37. Pelikan (1990, p. 72) refers this to the dubious 'disjunctive syllogism' of Eusebius' interpretation of Jesus' mandylion image. Also to the fact that seperating the two natures of Christ, as the Nestorians did, was anathematised by the Council of Ephesos in 431 (ibid. p. 73).

38. Pentcheva (2017, pp. 64-65) explores this very issue in her article 'Vital Inbreathing'.

39. The Greek Septaguint used words *eikon* and *homoiosin*, translating from Hebrew. *'καὶ εἶπεν ὁ θεός ποιήσωμεν ἄνθρωπον κατ᾽ εἰκόνα ἡμετέραν καὶ καθ᾽ ὁμοίωσιν...'* (Bereishit 1:26, Septuagint LXX) In English this became, *'Let us make man in our own image and likeness ...'* (Genesis 1:26, KJV)

40. The dialogue between the Patriach and those arguing the iconoclast case represents a very grounded process of negotiation. In modern terms would be said that within any material there are layers of energetic frequency containing the memory of every other thing 'in chora', and that the incarnation reveals the entire cosmos as filled with divine grace.

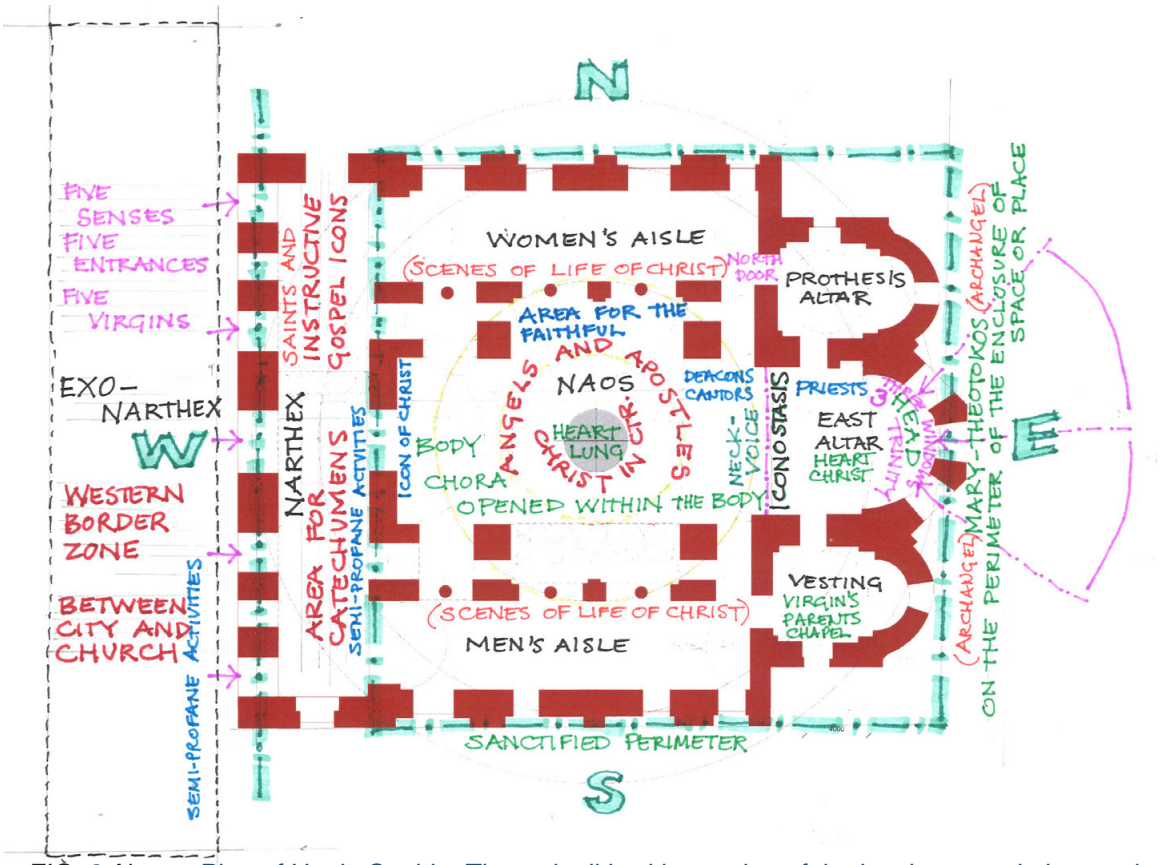


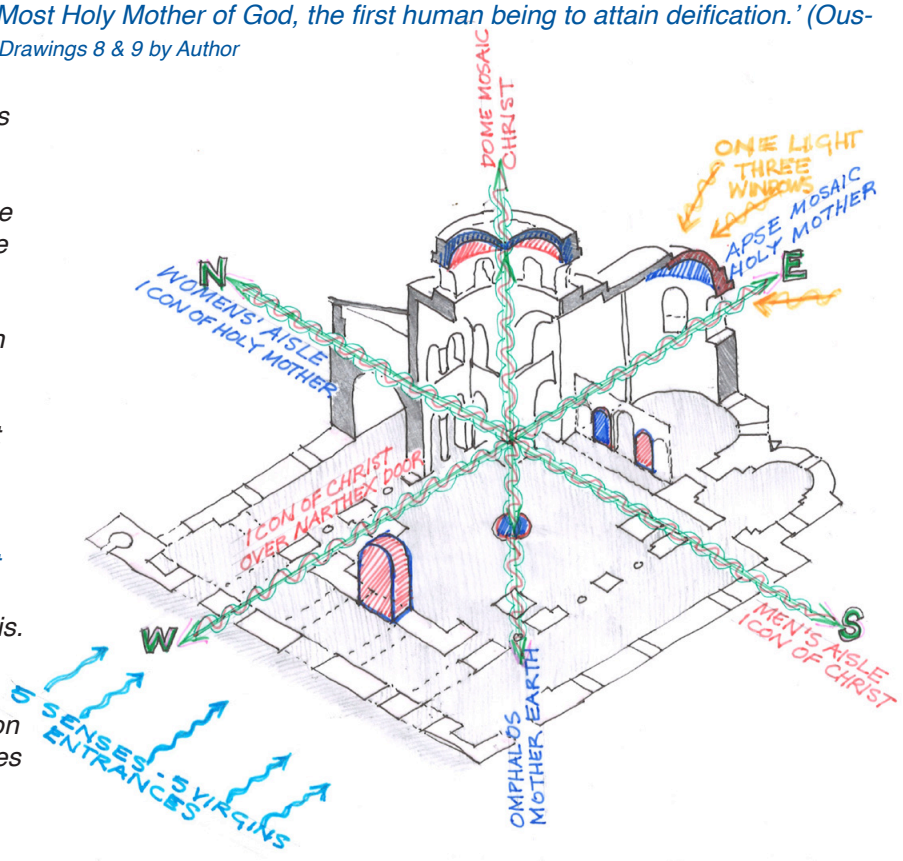
FIG. 8 Above: Plan of Hagia Sophia, Thessaloniki, with notation of the iconic organsiation, and indication of how this may have been elaborated in the 11th century, according to the system of middle Byzantine churches. Defining the polarity of perimeter and centre are: The Theotokos in the apse on the perimeter walls of the church, and Christ at the central point on the dome.

FIG 9 Below: Diagram of the opposing and conjoined energies in the earthly space of the Cathedral of Hagia Sophia, made by 'the two essential images: that of our Lord, God who became man, and that of the Most Holy Mother of God, the first human being to attain deification.' (Ouspensky, 1992, p. 49) Drawings 8 & 9 by Author

1) On the vertical axis the dome mosaic of Christ is above the omphalos stone in the floor, (the navel of the earth)

2) On the north-south axis the women and men of the assembly stand to left and right of the naos and the aisles. The icon of Christ and that of the Holy Mother are right and left of the Holy door in the iconostasis.

3) On the east-west axis, the Theotokos on the eastern apse faces the image of Christ above the 'beautiful door' of the narthex.



> ὑπόστασιν κἂν τῇ θεότητι ἀπερίγραπτος, "Christ is describable according to His hypostasis, remaining indescribable in His Divinity," explains St. Theodore the Studite. When we represent our Lord, we do not represent His divinity or His humanity, but His Person, which inconceivably unites in itself these two natures without confusion and without division, as the Chalcedonian dogma defines it. (ibid. p. 125)

On the contentious issue of representing the *person* of Christ, according to Barber (2002, pp. 110) three main issues were debated resulting in the refinement of doctrine, 'the *efficient cause*, embodied in the artist, the *material cause*, which concerns the nature of the icon itself, and the *formal cause*, which is seen in the subject shown in the icon'.

It was agreed that, 'an image pertains only to Christ's visible aspects; it does not claim to include the invisible and divine aspects of Christ' (ibid. p. 113), though it refers to them (anafora).[41] Therefore depicting the form of Christ, as the incarnate God, was acceptable only if image and archetype stay truthfully connected, and this must happen through the person of the painter and his method. Despite the material difference, Patriarch Nikephoros continued that to maintain truthfulness, the true image 'must remain dependent on the prior existence of the thing shown' and he gives 'a number of means by which the icon might trace its continuing relation to the archetype' (ibid. p. 111).[42] The icon could be a window into the *chora* of timeless realities which the lives of the saints had incarnated tangibly. How this *chora* is built into the churches and cathedrals of which Hagia Sophia can be seen in the Analipsis mosaic.

The event of the Transfiguration of Christ on Mount Tabor was a powerful defense because it taught that 'the invisible one had an appearance or likeness, the formless one had a form, and the measureless one came encompassed within a measure.' (Theodore the Studite, Refutation III. 38, p. 100:437) As Pelikan (1990, p. 95) writes, 'what the disciples had seen on Mount Tabor as a consequence of the Transfiguration was a circumscribed manifestation of the uncircumscribed reality of the divine nature.' He goes on to say that 'the light that appeared to the disciples on Mount Tabor in the Transfiguration was "uncreated" and therefore was an "action (energeia)" of God distinct from the "essence [ousia]" of God'. According to John of Damascus and Theodore the Studite, both vocal apologists for the return of icons to the church, God could

41. The art of 'referring to' (anafora) can be seen as equivalent to Foucault's analysis of 'emulatio' as part of analogy.

42. Therefore the image has value for veneration because of the reality of the holy person who existed. According to Demus (1976, p. 7) *'The image is not a world in itself; it is related to the beholder, and its magical identity with the prototype exists only for and through him. It is this that distinguishes the icon from the idol.'*

be seen in the creation, and one could worship the creator through the creation.[43] John explains,

> I do not venerate matter, I venerate the fashioner of matter, who became matter for my sake, ... through which my salvation has come about, I reverence it not as God, but as filled with divine energy and grace. (John of Damasus, Treatise II: 14.)

Since God had became circumscribed in Christ, he had clothed himself in an earthly body, an aspect of which was the visual image, and since Christ was *homo-ousios*, of the same substance with the Father, therefore meditation on Christ's earthly incarnation could indicate God. [44]

According to Theodore the Studite, the image 'being the same as its archetype in likeness, is distinct from the essence of the prototype, like Christ and his icon'.[45] Because Christ was incarnated it is permissible to represent his visual aspect.[46] Ouspensky, a Master iconographer of the 20th century, describes the practical side,

> 'Consequently, we only represent what has been revealed us: the incarnate person of the son of God, Jesus Christ. The Holy Spirit is represented as it manifested itself: in the shape of a dove at the baptism of Christ in the form of tongues of fire at Pentecost, and so on. (1992, p. 155) ... 'We contemplate not only the face of Jesus Christ, but also His glory, the light of divine Truth made visible to our eyes by the symbolic language of the icon.' (Ouspensky, p. 164).

Through the symbolic language of the icon the meditator approaches the memory of the holy person, the energetic trace of one who lived their life in accordance with the archetypal template of the Human being in the image of divinity.[47]

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43. John of Damascus spoke to the very issue raised by Constantine V of the 'difference in substance'. *'I do not venerate matter, I venerate the fashioner of matter, who became matter for my sake, and in matter made his abode, and through matter worked my salvation. 'For the Word became flesh and dwelt among us.' [Col. 1:15] It is clear to all, that flesh is matter and is a creature. I reverence therefore matter and I hold it in respect and venerate that through which my salvation has come about, I reverence it not as God, but as filled with divine energy and grace.'* (John of Damasus, Treatise II: 14.)

44. Demus explains, 'This process of emanation imparts to the image something of the sanctity of the archetype: the image, although differing from its prototype according to its essence ('κατ' οὐσίαν), is nevertheless identical with it according to its meaning (καθ' ὑπόστασιν), and the worship accorded to the image (προσκύνησις τιμητική) is passed on through the image to its prototype'. (Demus 1976, p. 6)

45. *"Η δὲ τῇ ὁμοιώσει ταυτιζομένη, ἠλλοτρίωται τῆς οὐσίας τοῦ ἀρχετύπου, ὡς εἰκὼν τοῦ Χριστοῦ πρὸς αὐτὸν δὴ Χριστόν.'* (Antirrheticus 3, β 2, p. 99, 417b) In: Tollefsen, T. (2018) p.132.

46. In the case of other saintly persons, contemplation on the image would indicate its prototype first imprint), which in turn would indicate its heavenly archetype (origin of the imprint). By a method of referring up, or offering up (anafora) a person could be guided to unity in God, using a process of analogy and empathy.

47. Through the language of symbols, connecting between distant centuries, one is reminded that 'analogy is the core of cognition', connecting eyes and heart.

4.2.2 The parts of the debate relevant to this research of translating between masonry architecture and iconography:

Of the three debated aspects of iconography, the *efficient cause* (the artist), the *material cause* (the substance on or in which the image appears), and the *formal cause* (the image itself), only part is directly applicable to the translation with masonry architecture that concerns this thesis.

On the *material cause* of the masonry church, the issue is less problematic because its material was the earth; bricks, stone, pozzolana, lime, glass. The methods of production were well known and all these materials came from the earth. It was known from Genesis that 'Human is created from earth', and the very word Adam (Adamah) means 'bloodly earth'. So being created from earth, the material of the architectural image was indeed homo-ousion with Christ, the incarnated God, the divine Person who became human, descended to earth and bearer of the divine image, delineated by the multi-sensory eucharist, the verbal *ekphraseis* of church architecture, and the visual image of the icons.[48]

The *formal cause*, despite being the major focus of the iconoclastic debates, is also less problematic when translating between icons and masonry architecture. The latter can be positioned as both an 'unlike image' and a 'like image', that is, architecture is not only a visual art but it is a multi-sensory, immersive medium.[49] It cannot replicate another's iconic form, but use its own intrinsic language, its materials, methods, and logic. Nevertheless, it too refers (*anafora*) to a *chora*, to which the listener is invited by the *ekphraseis*. The traces of the Incarnation in that *chora* are the conceptual and experienced qualities, the divine attributes, the divine names, referring to Christ the archetypal divine human. Architecture's own vocabulary of the divine attributes and divine names are the experienced qualities of the building; the light and shade, heat and cold, weight, balance, tension and compression, solid and void, and so on, since 'He has accommodated himself to quantity and quality'.[50] These are the *architekton's* equivalent to the icon painter's palette of colours.

48. The *ekphraseis* all share the theme of marble as the bearer of the image of the landscape, the cosmos, and the divine human. *'One might imagine that he had come upon a meadow in full bloom.'* wrote Procopius, (1954, Buildings, I. i. 60, p. 26), praising *'nature, like some painter'* for the beauty of the stone which adorns the church.

49. The connection of form and meaning (hermeneutics) in architecture became problematic with 20th century modernism. The image of a conceptual architecture, which we can discern in the *ekphraseis*, as iconic form, is therefore the cause of strong disputes in architecture today.

50. See Pelikan (1990, p. 84) (quoting John of Damascus), *'[The son of God] who existed in "the form of God" and who by the superiotrity of his nature transcended quantity and quality and size, has taken upon himself "the form of a servant," and by this drawing together [tautei sysolei] he has accommodated himself to quantity and quality, and he has assumed the express image [charakter] of the body. Therefore go ahead and view him in icons and present him for viewing, as one who wanted to be viewed,'* and he lists the typical scenes in the life of Christ.

The *efficient cause* of the artist is the closest to that of the masons who built Hagia Sophia. In the life of the icon painter, *acheiropoeiton* was the state of being that an image-maker must attain, in order to be able to paint a 'true image' of a subject who is not physically before him.[51] Like the masons who spoke of love and submission to the earthen materials in the last chapter, the icon painter must submit in his heart to his subject in order to paint it in a state of 'doing while not doing', Dionysios' *anenergesia*. Dionysios describes the method,

> And as in the case of sensible images, if the artist looks without distraction upon the archetypal form, not distracted by sight of anything else, or in any way divided in attention, he will duplicate, if I may so speak, the very person that is being sketched, wherever he may be, and will shew the reality in the likeness, and the archetype in the image, and each in each, save the difference of substance; (Dionysios, MT Caput IV: I, p. 218)

According to this method, the subject did not need to be physically present. In fact, they could have died, but their 'true image' could be retrieved by attention on the archetypal form within the painter. It is said that the first *acheiropoeiton* 'true image' of the Virgin Mary (the Holy Mother), was painted by St. Luke who knew her in person, and who retrieved her image 'from the depths of his soul'. His painting is preserved in numerous Byzantine replicas.

Given that the divine image also resides in every human being, we are reminded by Maximos that, 'every soul that cleaves to God is softened like wax and, receiving the impress and stamp of divine realities, it becomes "in spirit the dwelling-place of God" (Eph. 2:22)'.[52] Ouspensky concurs,

> 'The image of God is ineffaceable in man. Baptism only re-establishes and purifies it. The likeness to God, however, can increase or decrease. Being free, man can assert himself in God or against God.' (1992, p. 159)

For this reason, the icon painter cannot just paint whatever they like, he must serve an apprenticeship of discipline, prayer, and contemplation, copying the work of Master painters until hopefully he too learns to what 'reality' the icons are referring, and he attains the state of Master craftsman with *anenergesia*. The Seventh Ecumenical Council wrote,

> The making of icons is not an innovation of artists ... the origin of a work of art is with God and not with the artist. (In: Barber (2002, pp. 112-3).

While the artist has a mediatory role, his practice is 'related to divine inspiration'

51. Like the masons who spoke of love and submission to the earthen materials in Chapter 2 p. 121) and Chapter 3 (p. 208), the icon painter must submit in his heart to his subject in order to paint it in a state of 'doing while not doing' . Likewise I believe, the writers of the *ekphraseis*, as poets, also submitted their hearts to the 'true image' within their own souls.

52. Maximos the Confessor (1989) *Two Hundred Texts on Theology and the Incarnate Dispensation of the Son of God*, Trans. Sales, L., New York: St. Vladimir's Seminary Press (#12).

which must be 'in compliance with church tradition' (ibid. p. 114-5).

By painting the holy person whose life was an embodiment of timeless divine energies, divine archetypes, the icon painter assimilates himself to his subject, until his work attains the status of *achieropoeiton*. 'The spiritual practice of iconography' as Pearson (2005, p.1) calls it in his book *A Brush with God*, 'offers us a glimpse of things through God's eyes'. Pearson writes of prayer and fasting while painting, in particular the Hesychasts' Jesus prayer with its associated way of breathing.[53] An icon painter himself, Pearson (2005, p.2) sums up the essential debates through his experience,

> Scriptures tell us God is a rock, Shepherd, a fortress, a father, and so on. Does that mean that God is literally a rock, a shepherd, fortress, a father? Or, are we saying that God is like these things for us? And do these words about God exhaust the reality of who and what God is, in and of God's self? Certainly not. An image points to a reality, yet can never totally capture it.

They must learn to go along with 'things through God's eyes', and become one with it through the heart. This was presented in the masons' interviews in the previous chapter.

The person who contemplates an icon recieves the fruit of the inner vision of divine light bestowed on the Master icon-painter, relayed back to the icon in symbolic language via the painter's technique.[54] In a similar way, someone who enters the church to pray recieves the fruit of the masons' work. Therefore 'good iconography, strives to convey invisible reality in a visible form', and it's formal techniques include 'the dematerialisation of the figures and the use of inverse perspective' (Pearson, 2005, p. 3). These two have a parallel in a masonry architecture. The 'inverse perspective' effect is found in masonry architecture where the curve of the apse, vault, or dome, converges in a vanishing point within the space of the inhabitant.[55] The dome's sense of weightlessness, also found in

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53. Pearson (2005, p.9) also writes about gazing at the icon, *'Gaze until you can see it, not just with eyes or intellect, but with your soul and heart as well. let yourself become completely absorbed in this sacred encounter'*, and about 'Icons and grace', *'that icons are a tangible affirmation of the incarnation that offer us moments of sacramental encounter with the source of all holiness.'* (ibid. p.9)

54. Iconography points the way to a reality beyond itself. It can portray the visual aspect of the vast divinity of the Person, whom Christians call the incarnate Christ, thus it is one of the windows to the divine.'*The Spiritual reality of the icon assumes all its practical teaching value in the last phrase of the kontakion of the Triumph of Orthodoxy: "We confess and proclaim our salvation in word and images."'* (Ouspensky, 1992, p. 164)

55. *'Instead of a vanishing point out there, somewhere on the horizon, we become the vanishing point. If you study items that include architectural features, you will see that perspective has been altered to make the viewer the point at which everything vanishes. The spiritual implications of this are amazing. In God's reality, we are but a small spec, a vanishing point that is less than all we take in. We are no longer the centre of the universe – God and God's reality are.'* (Pearson, 2005, pp. 3-4)

vaults, apses and arches, is a dematerialisation of masonry's weighty materials, and remarked on in the various *ekphraseis* to the churches.[56]

For the icon painter who makes the image, or for the mason who builds the church, there is another level of spiritual discipline involving their materials. Just as the mason offers up the way he thinks things should be on the altar of his earthen materials and listens with his hands, so the icon painter also learns obedience to the divine order through his materials. Temple writes,

> 'Bearing all this in mind let us try to imagine the master icon painter taking from nature various minerals and vegetable substances which he will transform into an icon. He does this according to traditions that he has learned through long apprenticeship.' (Temple, 2001, p. 151)

Temple goes on to describe the exacting traditonal methods whereby the artist must collect and process his natural materials,

> 'which, in completion, can be understood as a transformation of matter. While thoroughly knowing the organic and natural properties of his materials the master painter breaks them down at one stage of their existence in order to re-create them on another level. And for this he needs to know the laws of creation. At the same time a parallel transformation takes place within himself, also according to the laws of creation.' (ibid. p. 151) [57]

He concludes that, 'in the painting of an icon, two illuminations take place: one visible in paint and the other invisible in the painter.' This is the process that I shall attempt to describe for the mason who builds a domed building with a cubic base in the next chapter. Though masonry architecture is the area in which the writer has direct experience, it has been necessary to search for analogies with iconography and liturgy first, to be able to argue for the reality of a compa-

56. *'And upon the circle [of the pendentives] rests the huge spherical dome (sphairoeides tholos) which makes the structure exceptionally beautiful. Yet it seems not to rest upon solid masonry, but to cover the space with its golden dome (sphaira) suspended from heaven. All these details, fitted together with incredible skill in midair and floating off from each other and resting only on the parts next to them, produce a single and most extraordinary harmony in the work, and yet do not permit the spectator to linger much over the study of any one of them, but each detail attracts the eye and draws it on irresistibly to its self.'* (Procopius, Buildings I. i. 48-53) Here Procopius also addresses another formal technique of the iconographer that does not allow the eye is to rest in a single point perspective, but presents its subjects from multiple angles at once.

57. Temple (2001, pp. 151-152) continues, *'We have seen in our study of the Philokalia what is the work of the true monk and Hesychast: while the painter works for the perfection of his techniques on mineral and vegetable matter, so does he inwardly work on maintaining a state of equilibrium so that his mind is protected from random mental distractions and his feelings from being lost among "passions". Intense psychic work, when rightly conducted, brings an inner state which is described as one of illumination. And so, in the painting of an icon, two illuminations take place: one visible in paint and the other invisible in the painter. The one takes place in the material world and the other in the psychic world two processes are intimately bound up with each other. We shall try to see that the properties and qualities of light and colour in the material part of a sacred painting will correspond to the spiritual qualities and energies active within the painter himself.'*

rable process for the masons of a building like Hagia Sophia, Thessaloniki. The next part of this chapter describes Hagia Sophia's mosaics and marble in brief, followed by a more extensive look at their formal expression of theology-philosophy, astronomy-cosmology, sacred landscape-holy figures in prophetic action.

4.2.3 Hagia Sophia's aniconic mosaics and the timing of construction during iconoclasm:

It was during these years that Hagia Sophia Thessaloniki's cross-domed form was constructed, either during the iconoclastic periods (726 -787 and 814 -842) or just before them.[58] It represents an architecture that was continuing to develop over the period of iconoclasm, much as the liturgy was doing. According to Isar (2009, p. 42) 'the term *chora* emerged in the context of the most violent debate around the definition of the icon in the eighth century, and the capacity of the icon to contain the presence of God,' a debate whose resolution was worked out concurrently with the architectural solutions of the cross-domed church. This fact alone would suggest that the masonry architecture was carrying significant theological meanings, and Isar's words confirm that,

> 'For the Byzantines, the space designated by the term *chora* was the matrix of the Incarnated Word, the most sacrosanct presence in Christianity celebrated in the holy icon, and the sacred space of liturgical participation.' (ibid. p. 42)

Hagia Sophia, Thessaloniki's cross-domed *typos* is confidently erected, probably by an *Architekton* and his team.[59] It has a sophisticated geometry and structural design, to provide a space for liturgical participation.[60] For its two main phases of construction, Velenis (2003) posits a (741-840 AD) date after the beginning of iconoclasm for the first phase, and the completion of its second phase before the end of iconoclasm, based on inscriptions in the mosaics which name an Emperor Constantine, Empress Eirene, and a 'humble Bishop Theophilos'.[61] An earlier

58. Writing about 'The Architecture of Iconoclasm', with reference to the cross-domed church, Ousterhout deduces that, "*Throughout Constantine's [V] long reign, there is evidence of the reformulation of the capital [... such that] we may begin to suspect a coherent building programme with ideological overtones"* (In: Brubacker & Haldon, 2001, p. 18)

59. For more on the *Architekton,* see Chapter 2 (2.4, pp. 90-101, p. 105). Also, Ousterhout 1999, p. 46 ff., & p. 201 ffSee a

60. Its design also influenced other regional churches in Macedonia and the Balkans. See Velenis' (2003, pp. 62-70) argument that the unusual design of Hagia Sophia's eastern apses responded to site-specific conditions and did not copy another church. The same unusual apse design was repeated in other later churches in Northern Greece and the Balkans, for no other apparent reason than they belonged on this model church in Thessaloniki. He also argues for a possible secondary upper dome or ciborion inspiring the design of Panaghia Chalceon church.

61. At the springing of the vault, on both sides, are the founder's inscriptions which read, 'Lord help Constantine Despot' (north side, not preserved) and 'Lord help Eirene Despoina' (south side), 'Christ help Theophilos (north side) and 'humble bishop' (south side). These have been taken to refer to the Emperor Constantine VI and his mother, empress Eirene of Athens, who

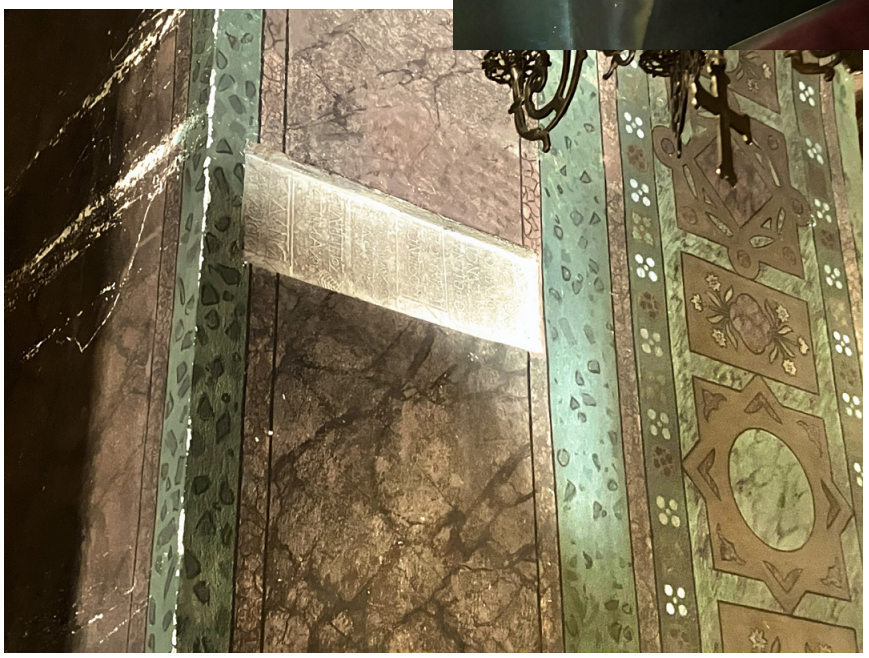


FIG. 10 Left: One of the four 'wind-swept' corinthian capitals around the square core of the naos. The colum shaft is of green Thessalian marble. Note the 'perforated' undercut marble in the column capital, showing the developing apophatic method in Byzantine sculpture. *Photo by Author*

FIG. 11 Below: White marble panel from the original white marble revetments, exposed on the left hand side of the steps up to the bema.
Photo by Author



FIG. 12 Below: White marble panel inset sideways with greek inscription of a dedicatory nature, part of the earlier marble revetments, surrounded by the present dark red and green painted walls.
Photo by Author



date of completion from the Greek Orthodox ecclesiastic authority is between 705-726 AD without mention of whether this refers to a first or second phase.[62] Theoharidou (1988) gives the earliest date of 690 AD for completion of the both main construction phases, using dendrochronology.[63] Cormack (1981, p. 120) is more specific with a later date of 783-787 after empress Eirene and her general Staurakios had liberated Thessaloniki and much of Hellas from the threat of the Sclaviniae. He suggests,

> 'The historical circumstance which may explain the need for a new impressive church in the late eighth century in Thessaloniki was the official reorientation of the ecclesiastical jurisdiction of Illyricum from Rome to Constantinople.' [64]

What can be established for this thesis is that there was a relationship in timing between iconoclasm and the iconographic decoration of the church.[65]

The present interior green and red marbelised paint on the walls, replacing polished marble revetments, is very dark, and absorbs light rather than reflecting it.[66] The original wall revetment containing white marble would have been

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ruled together from 780-788. Although Eirene and Bishop Theophilos were supporters of the icons, the decoration is aniconic.

62. See Appendix D for my exploratory notes on the cathedral's construction timing.

63. Brubacker & Haldon (2001, p. 5) caution that, *'The belief that non-figural church decoration must best be placed into the period of iconoclasm has affected the scholarship ...'* and they suggest that non-figural mosaics need not be dated to the years of iconoclasm.

64. I have mentioned this reorientation in Chapter 3 of this thesis.

65. Since that time the building has survived more than iconoclastic debates. It was built as an Orthodox cathedral, has been used as a Catholic cathedral, then as a Mosque, and now has reverted to an Orthodox church. Throughout all this, it was a focus for diverse people's prayer, and was repaired and maintained. We are fortunate that today the interior decoration preserves the most important images of Orthodox ecclesiastical consecrated space.

66. Theoharidou (1988, p. 30) writes that white marble revetment clad the *naos* while there was none in the aisles or narthex; the ambo was of monolithic green marble, as are the columns. Some small areas indicate the carved white marble and no further archaeological evidence is available for other marble colours on the walls. One might speculate on other colours such as green as follows: 1) Reconstruction of the church after the fire of 1890 completely re-finished the interior. This was a restoration rather than conversion with innovations, in keeping with the Ottoman attitude to the church interior; the mosaics were visible over the centuries and were restored in the early 20th century. The marble columns on the ground floor were restored after severe fire damage, and the floor had to be completely replaced. It would not be unreasonable to think that the red and green painted finish replaced what existed at the lower levels before the fire. 2) Some areas of the ground floor have been restored with red and green marble panelling from quarries local to Thessaloniki, though these are in areas thought to have been without marble revetments originally. 3) Churches of Hagia Sophia's status were clad with multicoloured marble revetments on the lower floors before the legitimization of iconography which generally replaced marble after the 10th century. 4) A substantial proportion of the interior of Hagia Sophia, Constantinople is also clad in varieties of green and red marble, as well as black and white and ochre, just as the outer walls are also constructed with white stone and red bricks. 5) The 6th century Sougitha as well as the *ekphraseis* of Procopius and Paul the Silentiary, and the later 10th century *ekphrasis* of Constantine of Rhodes, all praise multi-coloured marble interior walls of their respective churches.



FIG. 13 Above: Late 8th century aniconic tapestry pattern on the great arch above the bema, with crosses and foliage. Photo by Author

FIG.14 Bottom: 3rd century aniconic mosaic pattern from the Rotonda church of St. George. Photo by Author



polished and reflective. The walls of the interior would have been covered with 'elaborate marble wall revetment and colourful flooring' (Theoharidou, 1988, p. 30). The wall revetment would have been 'mostly of white marble' and confined to the sanctuary and the naos, where it reached 'at least as high as the first cornice' judging by 'the remnants in the soffits and the pilasters in the apse windows' of the sanctuary (ibid. p. 30).

Green Thessalian marble was used for Hagia Sophia's column shafts, and the white column capitals are a 'wind-swept' corinthian, whose sculptor has used an undercut filigree technique. The apophatic method of removing what is known in order to reveal 'the unseeen in the midst of the visible' is characteristic of Byzantine art from sculpture to iconography. Green Thessalian stone was renowned but expensive, and was the preferred choice for columns in Imperial churches.[67]

The 'qualities of brightness, brilliance and polychromacity' and the 'creation of dazzle' is acknowledged as an iconic principle of the Byzantine church, by James' (2012, p. 201) commentary on the *ekphrasis* of Constantine of Rhodes to the Holy Apostles. 'Its marble is like the Image not made by human hand, and its walls are harmoniously covered therewith,' hymned the *ekphrasis* of Hagia Sophia in Edessa, 'All polished and white, (this marble) is so shining that it gathers light within itself like the sun' (In: Mango, 1972, pp. 58-59). Procopius writes;

> 'Indeed one might say that its interior is not illuminated from wthout by the sun, but that the radiance comes into being within it, such an abundance of light bathes the shrine.' (Procopios, Buildings I. 1. 28-35, p. 17)

Thus the profoundly symbolic connection between: the divine light (the grace of the Holy Spirit witnessed as light on mount Tabor); the human being (the Christ logos) who is created from earth; and the marble walls as *eikon*; is made in the churches which developed between the 6th -9th centuries.

During iconoclasm the upper parts of the interior of Hagia Sophia would have been covered in luminous gold mosaics with a large cross in the apse similar to that of Hagia Eirene in Constantinople according to Cormack (see Fig.

67. Referring to the use of Thessalian marble in Hagia Sophia, Constantinople Melfos (2008 p. 395) writes, *'Paul the Silentiary ... compares the green columns to exquisite jewels from Thessaly and to groves of bright flowers'*. He adds to his technical article: '*The quarries on Chasanbali Hill were in operation between the seventh and tenth centuries AD'*, (ibid. p. 396). 'Th*e stone from these quarries, which is a unique green ophiolitic breccia with numerous white marble inclusions, was known as 'green Thessalian stone' in late Latin and Byzantine literature (Julius Pollux, Diocletian's Price Edict, Paul the Silentiary, Evagrius Scholasticus, the Continuator of Theophanes and Constantine VII Porphyrogenitus).'* (ibid. p.388)



FIG. 15 Top left: Hagia Eirene, Constantinople's apse (532- 537) with iconoclastic cross. Note the green base, the droplets at the corners and steps up to the cross. The inscription above reads: ὁ οἰκοδομῶν εἰς τὸν οὐρανὸν ἀνάβασιν αὐτοῦ καὶ τὴν ἐπαγγελίαν αὐτοῦ ἐπὶ τῆς γῆς θεμελιῶν. 'He who builds his ascent up to heaven and founds his promise on earth.' Photo by Author

FIG.16 Bottom: Aniconic mosaic of gold cross within a circular space of radiations and a perimeter of rainbow mandorla. Note the droplets at the cross' corners and the six pointed stars. The shimmering gold mosaic descends the apse crystallising into a landscape woven with cubic geometry, trees and crosses, the bottom border a greenish blue resonant of the circumfluent waters. The mosaic of the Theotokos and infant Christ replace an earlier aniconic cross, like that of Hagia Eirene, still faintly visible in the gold mosaic. The centre of both figures concides with apse's geometric centre in front of the image bringing an intensity to their gaze. Her feet and throne project in front of the lower border. Both techniques make the image seem to float in front of the surface of the architecture, as a projection in the space of the beholder. Photo by Author



12)[68] The traces of the large cross in the apse connects Hagia Sophia with Hagia Eirene's 8th century reconstruction and mosaics, and with the now destroyed church of the Dormition at Nicaea, according to Grabar (1984, p. 176).[69] The inscriptions also indicate a connection between these three churches of the 8th century. The excerpt from Psalm 64:5-6 around the apse is used in the consecration of churches, leading to the conclusion that the mosaics were done as the building construction itself was being finished.[70] Today in Hagia Sophia, Thessaloniki, there remain some areas of the gold mosaics containing gem-studded silver crosses alternating with large foliage leaves on the barrel vault over the *iconostasis* in front of the apse (see Fig. 21).[71]

On the top of the vault is a large gold cross, crystallising from radiating bundles of energy rays, within a shimmering, polychrome circular mandorla. Its geometry resonates with the design of Hagia Sophia's dome, the cross indicating the directions of the drum's four faces and the triplicate fine rays indicate the three windows on each face. Though the mosaic is compact and aniconic, it can be read as a recapitulation of the building's 12-part geometry and of the building as an entity of light.[72] The radiating colours of the mandorla also recapitulate the colours of the rainbow which are associated with the building's four 'broad arches' in the Sougitha,

68. Cormack (1981, p. 11-120) *'The choice of a non-figurative scheme for S. Sophia in the late eighth century links it with the current decorations of the apses of S. Eirene and (presumably) S. Sophia at Constantinople, and it is unlikely that this connection with the Great Church of the capital is a coincidence, for there is a possible historical context for the building of the new large domed church, the largest built in this city since the fifth century and the latest of its size. The historical circumstance which may explain the need for a new impressive church in the late eighth century in Thessaloniki was the official reorientation of the ecclesiastical jurisdiction of Illyricum from Rome to Constantinople.'*

69. Ousterhout believes the Hagia Eirene was 'substantially rebuilt by Constantine V 'in around 754 AD' (In: Brubacker and Haldon, 2001, p. 9) Following on Andre Grabar's earlier observations, he also writes on the epigraphic connections between the Koimesis church, Hagia Eirene, and Hagia Sophia, Thessaloniki.

70. According to Grabar (1984, p. 176) the excerpt from Psalm 64:5-6 around the apse in Hagia Sophia's mosaic is used in the consecration of churches (ta enkaineia) The inscriptions reads: 'ΠΛΗΣΘΗΣΟΜΕΘΑ ΕΝ ΤΟΙΣ ΑΓΑΘΟΙΣ ΤΟΥ ΟΙΚΟΥ ΣΟΥ, ΑΓΙΟΣ Ο ΝΑΟΣ ΣΟΥ, ΘΑΥΜΑΣΤΟΣ ΕΝ ΔΙΚΑΙΟΣΥΝΗ ΕΠΑΚΟΥΣΟΝ ΗΜΩΝ Ο ΘΕΟΣ Ο ΣΩΤΗΡ ΗΜΩΝ, Η ΕΛΠΙΣ ΠΑΝΤΩΝ ΤΩΝ ΠΕΡΑΤΩΝ ΤΗΣ ΓΗΣ, ΚΑΙ ΤΩΝ ΕΝ ΘΑΛΑΣΣΗ ΜΑΚΡΑΝ', *'We shall be filled with the goodnesses of your house, your holy church [naos], listen to us O God our saviour who is marvellous in justice, the hope of all in the far limits of the earth, and in the far reaching sea.'* (It would be possible to understand 'good-nesses' in an abstact way, as the divine virtues and divine names of Dionysios).

71. Grabar (1984, p. 176) suggest a possible connection in design with the Rotonda, which had been converted to a church. *' A Sainte-Sophie de Salonique, comme dans les voutes des niches sur la peripherie de la Rotonde de Saint-Georges, dans la meme ville, la mosaique est une imitation de tapis ou d'un autre tissu historie.'*

72. The geometry we shall see in greater depth in both this chapter and the next on the church's masonry architecture. The aesthetics of light and its representation in iconongraphy and architecture is explored through the work of Curcic.

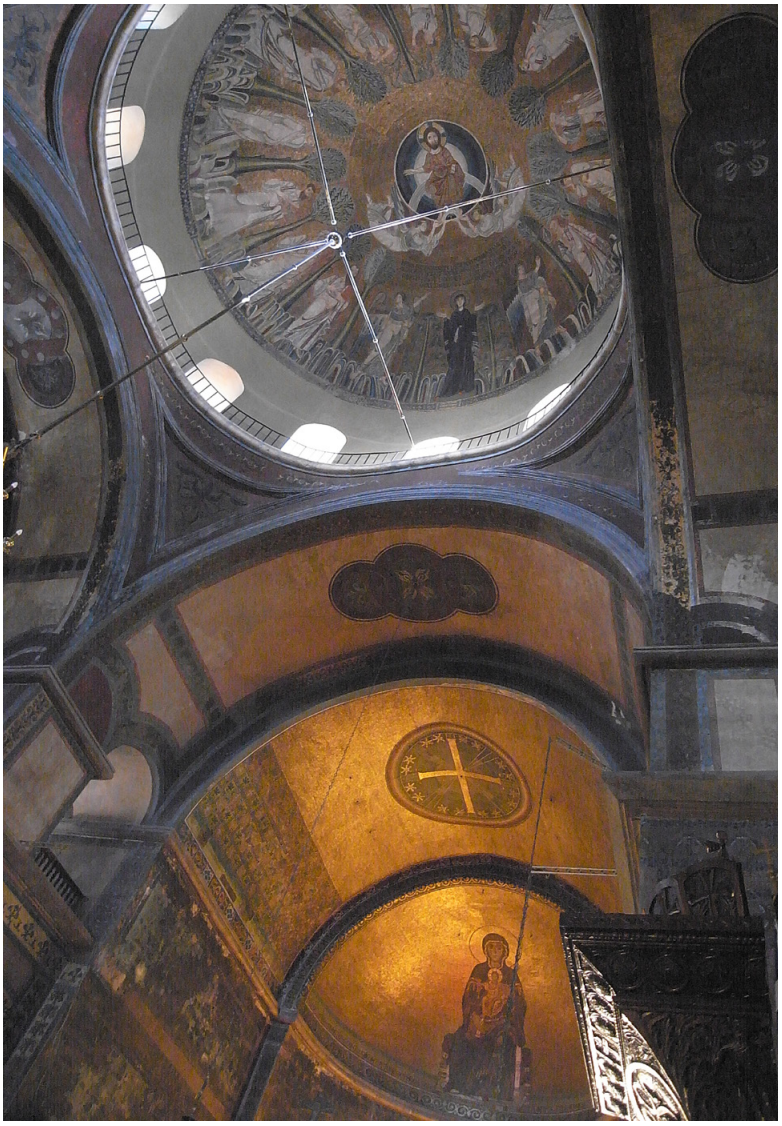
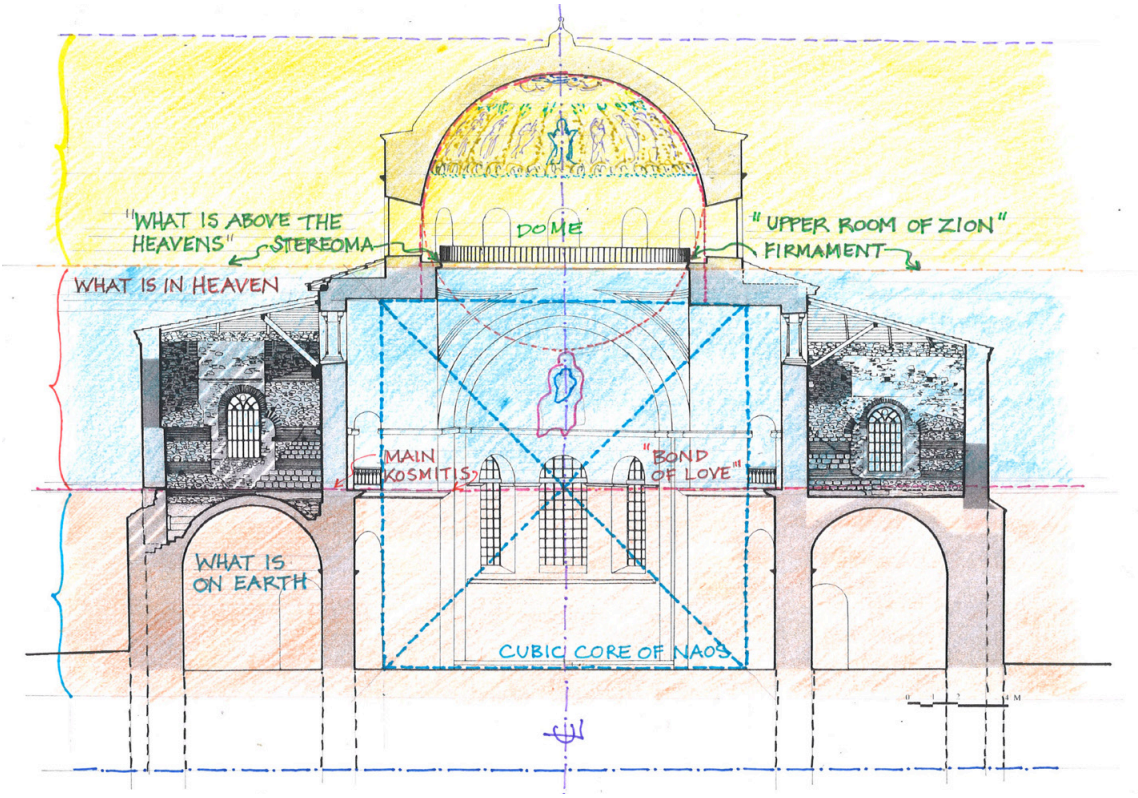


FIG. 17 Above: The iconography of the topmost 'celestial ' zone: In the 'analipsis' (ascension of Christ) mosaic in the dome, the centre is the 'source of all the emanations' within the light mandorla at the dome centre. Surrounding the 'analipsis', like the stars around the cross, are the Apostles and Mary who are the "radiating lines" of Dionysios' and Maximos' Mystagogia and St. Dorotheus of Gaza. Spiritual light enters through them indicated by the 12 windows around the dome. The choir entered through these windows to sing from the gallery encircling the dome, in the 'upper room'. The dialogue of Christ and Mary in the dome is reiterated by the Theotokos facing the narthex where Christ was depicted above the entrance. Photo by author.

FIG. 18 Below: Placement of mosaics within Symeon's three parts of the church considered vertically. Source: Theoharidou (1994) with annotations by author.



> The splendor of its broad arches-they portray the four ends of the earth.
> They resemble also by the variety of their colors the glorious rainbow. (McVey, 1983, p. 95)

Despite the ban on figurative imagery, the makers of the mosaics were masters of their materiality, through which they conveyed a sense of brilliant light through the making and setting of the mosaic materials, within the expanse of gold and in the rainbow coloured shimmering mandorla of the cross.[73]

Lidov (2017, p. 426) describes 'the spatial dimension of the gold colour which is also achieved by sophisticated technique. The gold smalt was prepared in such a way that the light penetrating this transparent smalt was reflected at various angles from a golden or silver plate laid within it.' He states that it was 'laid deliberately unevenly' and that it could be 'laid at different angles' and slightly different levels, creating 'the effect of living light ... a twinkling light, the intensity of which is constantly changing.'[74] The interior luminosity must have recalled the 'super-luminous gloom'of Dionysios the Areopagite's *Mystagogia*,

> Triad supernal, both super-God and super-good, Guardian of the Theosophy of Christian men, direct us aright to the super-unknown and super-brilliant and highest summit of the mystic Oracles, where the simple and absolute and changeless mysteries of theology lie hidden within the super-luminous gloom of the silence, revealing hidden things, which in its deepest darkness shines above the most super-brilliant, and in the altogether impalpable and invisible, fills to overflowing the eyeless minds with glories of surpassing beauty. (Dionysios 1897, 1:1, p. 131)

Gold mosaic was generally limited to within the dome, the apse, and the great arches; these are the designated 'celestial zones' of the building, according to Demus (1976, p. 15). The apologists for icons did not consider this abstract imagery and its masonry architecture alone sufficient to convey the *topos* and *chora* of the church, and identify the meaning of its parts for the liturgical rituals.

The aniconic mosaics bear the monogrammes of Emperor Constantine and Eirene and have been dated to 787 AD.[75] Icon veneration was officially restored

73. According to Olivier Clement the gold is called the 'light' by iconographers, and gold is the foundational sign for the divine grace found in the icons. (www.myriobiblos.gr)

74. The debate about the correspondance of the material and the subject depicated as 'homoousion', taken to its logical conclusion, affirms that meditation on a single glass tessera could communicate the structure of distant galaxies, and the persons of saints, to those who could 'see' the energetic memory of its atomic spectrum.

75. Cormack dates the aniconic mosaics to 787 AD in his 1981 monograph on 'The Apse Mosaics of S. Sophia at Thessaloniki'. This was the year that the seventh ecumenical council at Nicaea condemned iconoclasm. However, again the iconoclasts regained power after Leo V's accession, and the use of icons was again forbidden from 815 - 843 AD. The final council on iconoclasm, persuaded by the arguments related to the acheiropoeiton and the incarnation by apologists such as John of Damascus, and Theodore the Studite, reversed their earlier decisions. See Brubacker and Haldon (2001, Ch. 15, pp. 243-269)



FIG. 19 Above: Looking up into the dome, the 9th century mosaic showing the image of Christ at the ascension, borne up by angels, and the apostles 'gazing up into heaven'; the inscription: 'And while they looked steadfastly toward heaven as he went up, behold, two men stood by them in white apparel; Which also said, Ye men of Galilee, why stand ye gazing up into heaven? this same Jesus, which is taken up from you into heaven, shall so come in like manner as ye have seen him go into heaven' (Acts 1:10-11, KJV) Photo by Author



FIG. 20 Below left: 16th century Cretan portable wooden icon, showing the same scene with same heirarchic elements and figures, but on a flat panel, without the curves of the enclosing domed space.
Note the same positions of Christ and the Holy Mother above and below, the four archangels at the four corners of a square. These are frequently seen on four pendentives around a dome. Cosmologically, the human is positioned on a central axis between the celestial and earthly realm, within the four corners of the earthly plane, in the centre of of the wheel of twelve constellations seeming to revolve around a central axis.
Available from: https://iconreader.files.wordpress.com/2012/05/crete_late15thcentury.jpg [Acccessed: 13 January, 2019]

in 843 AD, by the Empress Theodora, widow of emperor Theophilus, an event still celebrated in the Eastern Orthodox Church as the 'Feast of Orthodoxy'. The two images of Christ and of the Holy Mother, authoritatively deemed *acheiropoeiton* -'not made by hands', formed the basis of the icons which are set up in every Byzantine church, as they are in Hagia Sophia Thessaloniki today (see Figs. 8 & 9). The concept of the image not made by hands and therefore made by God was further extended in Byzantine iconography to include illustrating parables from the gospels which are prophetic and given by revelation.[76]

4.3 Hagia Sophia's Figurative Mosaics

In the ensuing period of reconfiguring the icons' place in public worship, Hagia Sophia's figurative mosaics were added dated by inscriptions.[77] In the church's central dome the mosaic of Christ's Ascension (*analipsis*) is 9th century. [78] The choice of the *analipsis* for the dome, rather than Christ as *Pantocrator* which was preferred after the 10th century, may reflect the negotiated conclusions of the long iconoclastic debate.[79] The dome mosaic contains the inscription from Acts 1:11 (see Fig. 14).

> Men of Galilee, why do you stand looking up towards heaven? This Jesus, who has been taken up from you into heaven, will come in the same way as you saw him go into heaven. (Trans. Mavropoulou-Tsioumi, 2014, p. 22) [80]

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76. Iconography portraying such stories was, as we have seen, reserved for the middle section of the churches. This kind of iconography conveys its message through allegory. According to Temple (2001, p.8) *'...the allegorical method of understanding scripture was central to the mysticism of such men as the Jewish philosopher Philo, the Christian Platonist Origen and his pupils St. Basil the Great and St. Gregory of Nazianzus who compiled an anthology of their master's writings known as the Philokalia of Origen.'*

77. There is debate among scholars as to the exact dating of the enthroned Theotokos, but there seems to be consensus that it was done in at least two phases (see Cormack, 1981, pp. 127 ff.) Most scholars agree that the Analipsis (Ascension) mosaic belongs to the end of the 9th century, based on an inscription naming the archbishop as Paul (880-885 AD). Velenis (1997) suggests that the Analipsis mosaic preserves the inscription from an earlier phase of decoration.

78. The icon addresses the relationship between the concept of absence and the apophatic technique in theology. The Greek term analipsis is used here because it combines two concepts, 'up' (ana-) and 'absence' (-leipsis), since this is the time when his image returned to God and was no longer visible to the Apostles. Ten days later at Pentecost they recieved the Holy Spirit which descended with fire and wind within themselves.

79. The debate's after-effects are evident even a hundred years later when Constantine of Rhodes (In: James, 2012) begins his *ekphrasis* of the church of the Holy Apostles by distancing Chistian imagery from pagan symbolism (pp. 27-31, ll. 125-161) and ends it with a lengthy eulogy of the mosaics *'depicting contests and images worthy of veneration, which teaches us the abasement of the Word and His presence among us mortals'* (pp. 71-83, ll. 751-945).

80. Inscription from Acts 1:11 Ἄνδρες Γαλιλαῖοι, τί ἑστήκατε βλέποντες εἰς τὸν οὐρανόν; οὗτος ὁ Ἰησοῦς ὁ ἀναλημφθεὶς ἀφ' ὑμῶν εἰς τὸν οὐρανὸν οὕτως ἐλεύσεται ὃν τρόπον ἐθεάσασθε αὐτὸν πορευόμενον εἰς τὸν οὐρανόν. Ye men of Galilee, why stand ye gazing up into heaven? This same Jesus, which is taken up from you into heaven, shall so come in like manner as ye have seen him go into heaven.

Christ is centrally placed enthroned on a rainbow of light, borne up by two archangels, while behind his figure dark rings contract into light at the hidden centre (see Fig. 19).[81] He is ringed by twelve Apostles, Mary, and two more archangels. The figures stand as if dynamically hovering in a landscape of boulders or billowing waves, among trees in the wind, gazing as Christ ascends (*analipsis*) into the apex of the dome, being 'taken up into God'.[82] Christ, Mary, the four archangels, and twelve apostles, form a connecting link between Earth and Heaven (compare Figs. 19 and 20). The geometry of 1, 4, 6, and 12, the hidden centre and being weightlessly suspended, are themes which recur in the architecture of Hagia Sophia in Chapter 6.[83]

In the upper part of the main apse, the large figurative mosaic of the *Theotokos* (Holy Mother) enthroned first greets the viewer with her direct 'gaze' (see Fig. 13). [84] She is in triumphal mode with Christ also facing the viewer. Her mosaic replaced the large iconoclastic cross which is still faintly visible in the gold background mosaics (see Fig. 16).[85] The *Theotokos* (God-bearer) on the apse is also thought to date from the 9th century, though part of the mosaic may have been re-worked in the 11th century[86]. Cormack (1981, pp. 129-130) discusses

81. The figures are similar to the late Roman mosaics in the Rotonda of Galerius from the 3rd century AD, nearby in Thessaloniki. Their image is pre-iconoclastic late Roman, rather than the Christ Pantocrator which became the standard thereafter.

82. Evdokimov (2011) writes about the type of the Ascension icon,'God descended to the gates of Hades, broke them down, and then rose up to the dors of heaven: *"By his descent, the Lord destroyed the adversary, and by his ascension he exalted man."(loc 5210 of 6241) ... We can even say that the Ascension icon represents the pentecostal epiclesis, that is, the moment when "I will ask the Father and he will give you another Advocate to be with you forever" (John 14:16)'* (loc. 5229 of 6241) *'Often rays of light are shown issuing forth, indicating the "uncreated energies", which communicate divine life to the church, even while Christ is seated in heaven.'* (Hart, 2022, p. 336)

83. The base of the scene is encircled by a decorative band including a text that the founder of the church was archbishop Paul, identified as the Metropolitan of Thessaloniki (885 AD), who had connections with the ecumenical patriarch Photios.

84. Thought to be a regional copy of the one in Hagia Sophia, Constantinople.

85. Robin Cormack's monograph (1981) on 'The Apse Mosaics of S. Sophia at Thessaloniki' dates the present mosaic to after 783 AD. *"Study of the photographs shows that the method of operation in inserting the Virgin did not entirely mask the original central motif of the apse. On each side of the Virgin [Theotokos] at shoulder level, instead of hacking out the complete original mosaic, all that was done was to pick out the rows of coloured tesserae and to replace them with gold tesserae. Since the new tesserae were not identical in appearance, or in their plane, with the original gold tesserae, a 'ghost' of the original composition remained visible. The original motif can be reconstructed without difficulty. It was a vast gold cross, outlined by dark tesserae, similar in form to that in the apse of S. Eirene in Constantinople "* (Cormack 1981, p. 118)(In the Δελτίον ΧΑΕ 10 (1980-1981), Περίοδος Δ'. Στη μνήμη του Ανδρέα Γρηγ. Ξυγγόπουλου (1891-1979), pp.111-136 (www.deltionchae.org), Athens)

86. *"Because the mosaic of the Theotokos appears somewhat clumsy, Pelekanides' proposition that the first mosaic of her was made before the 11th century seems more plausible, despite Cormack's archaeological scrutiny, and that there was a second phase where some improvements were made to the mosaic along with a new cycle of frescos in the narthex in the 11th*

whether her designation changed from *Theotokos Hodegetria* to *Theotokos Platytera* as Pelekanides claimed.[87] Pentcheva (2006, p. 80) makes the connection between the *Hodegetria* and the *Theotokos Nicopoeia* (bringer of Victory) another designation whose delineation is similar and 'features Mary with the Child in her arms set in front of her chest. She places one hand on the infant's shoulder, and the other on his thigh'.[88] Though this name was not used in early centuries, this in an early type of Theotokos with Child, often depicted standing with two warrior saints one either side. Such an attitude is appropriate for the mosaic's time is history soon after the 'Triumph of Orthodoxy' and the return of icons to devotional space.

Some wall-paintings of monks and local saints such as Saint Theodora from the 11th century have also survived in the narthex at ground floor level on either side of a window.[89] Byzantine iconography characterises saints as windows of light in themselves, and so any of the window admitting light at the ground level could be seen as the figure of a saint.

Thus what exists today in the cathedral of Hagia Sophia are the mosaics in the upper level above the highest cornice (celestial realm), the zone of middle level with painted marble revetments (originally likely to have been real marble from the sacred landscapes of the mountains of the *oikoumene*, as was typical until iconography was permitted), and two vestigial saints frescoed around a narthex window of the realm below the lowest cornice (the everyday earthly realm).[90] The two main mosaics, one of Christ and one of the Holy Mother, derive from the two *acheiropoeiton* images, legitimised by the Triumph of Ortho-

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century." (Cormack, 1981, p.) This dating is supported by Velenis (2003, pp. 66-70) arguing that Hagia Sophia was a regional inspiration for churches such as Panaghia Chalkeon (1028), St. Sophia in Ochrid (1037-1056), and churches in Macedonia.

87.'Panagia Platytera' (Greek: Πλατυτέρα; 'wider' or 'more spacious') is an icon of the Holy Mother / Theotokos, facing the viewer directly, usually depicted full length with her hands in the orans position, and with the image of Christ, as a child in front of her chest, also facing the viewer directly. Sometimes the image of Christ is contained within a mandorla at the place of her heart. Poetically, by containing the Creator of the Universe in her womb, Mary has become Platytera ton ouranon, which means: "More spacious than the heavens." This type is sometimes called the "Virgin of the Sign" or "Our Lady of the Sign," a reference to Isaiah 7:14: "Therefore the Lord himself shall give you a sign; Behold, a virgin shall conceive, and bear a son, and shall call his name Emmanuel." Such an image is typically placed in the apse above the altar.

88. *'...two excerpts from Gregoras and Pseudo-Kodinas, written in the fourteenth century, do not record the existence of a Nikopoeia icon but discuss instead a chapel dedicated to the Theotokos "Victory Bringer" in the Blachernae palace. The Hodegetria icon was brought here during its annual sojours in the imperial residence in the Late Byzantine period.'* (Pentecheva, 2006, p. 80)

89. It is not known whether the walls of the narthex and side aisles contained more frescoed icons, though it seems likely. We only know that they are not constructed in a way that usually recieved marble revetments.

90. See Mango (1972, pp. 85-86) for Paul the Silentiary's eulogy on the use of marble 617-682

doxy, and their figures seem to float in a shining golden upper aither. They are more than sufficient for the purpose of this thesis as they enable one to read the iconography in concert with its masonry architecture (see Fig. 43).

Translating between the icon and the church's masonry architecture, which is the goal of this thesis, petains to a small portion of the greater theology of the icon defined through iconoclasm. In so far as it is relevant to a possible masons' *orthopraxy,* the underlying architecture of Hagia Sophia's mosaics, their analogy and method, merits a more detailed look. The analysis of icons in Dr. Richard Temple's book, *Icons and the Mystical Origins of Christianity* comes closest to permitting this translation into tangible structure and the conceptual architecture of *ekphrasis*. Aspects of Hagia Sophia's iconography which are translatable into masonry architecture are the geometries of theology-philosophy and astronomy-cosmology, the figures of sacred landscape, and the properties and qualities expressed by the holy figures in prophetic action.[91] In Hagia Sophia these analogies are effected through 'dissimilar representations' since architecture's means of expression are stone and air, earth, lime and water.[92] The 'less cognate' aspects of Hagia Sophia's iconography must, of necessity, be selected here for translation into masonry architecture.[93]

In this section on icons' *theoria* and *mystagogia*, I will first address the way that icons present theology and philosophy using geometry, hierarchy, and religious protagonists. Then I look at how they notate spatial cosmology via astronomy, and link the liturgical year to the cosmic landscape. Finally I look at how how these are represented with material earthly landscapes and the stories of holy persons as easily recognised symbols that are tangible and sensory. *Theoria* as outer knowedge and *mystagogia* as inner experience are entwined in the icon. Icons do their work exteriorly and interiorly, like liturgy. Their themes unfold within the 'church' of a person's psyche and in the *diaconion* of a person's actions in the world.

91. The properties and qualities are also known as the virtues and the divine names.

92. Cf. Dionysios (1897, p,152) *'If, then, the negations respecting things Divine are true, but the affirmations are inharmonious, the revelation as regards things invisible, through* ***dissimilar representations****, is more appropriate to the hiddenness of things unutterable. Thus the sacred descriptions of the Oracles honour, and do not expose to shame, the Heavenly Orders, when they make them known by* ***dissimilar pictorial forms****, and demonstrate through these their supermundane superiority over all material things. And I do not suppose that any sensible man will gainsay that the incongruous elevate our mind more than the similitudes; for there is a likelihood, with regard to the more sublime representations of heavenly things, that we should be led astray, so as to think that the Heavenly Beings are certain creatures with the appearance of gold, and certain men with the appearance of light.'*

93. *'Because it is necessary that that they who place attributes on that which is above every attribute, should place the attributive affirmation from that which is more cognate to it; but that they who abstract, with regard to that which is above every abstraction, should make the abstraction from things which are further removed from it. Is not life and goodness more (cognate) than air and stone?'* (Dionysios, 1897, MT III:1, p. 93)

4.3.1 The Geometry of Philosophy and Theology: The Ladder of Ascent and Descent.

In the Jewish tradition of revelation, the tangible, earthly world was a sign for a greater truth given by God. It was this truth which the prophets indicated by their actions, recorded in the Torah and holy books. The Jews had their own oral traditions for a way of life that would guard the purity of the Godhead, evidenced by the phrase to 'put a fence around the Torah'.[94] As the closely related Jewish and Christian communities grew more distant after the late 3rd century, different strategies emerged for guarding the essence of the prophetic message. The multi-cultural Christians looked to their own oral traditions which we can call broadly speaking Hellenistic, replete with imagery and symbolism, to protect the message of Jesus.[95]

For the early Christians who were heirs to the Torah and Gospels (Old and New Testament), the biblical story of Jacob's ladder illustrated the sacred connection between earth and God, mediated by 'the angels of God ascending and descending on it' (see Figs. 21, 22).[96] In the Hellenistic tradition there was a divinely ordained series of levels relating the divine archetype to its earthly image which can be traced from the philosophy of Plato all the way through to Plotinus in the 3rd century AD who states that "there is nothing undesigned, nothing of chance" (Enneads, 1969, p. 96).[97] (see Figs. 23, 24). To be able to carry these hierarchies over into Christian iconography, some theological changes were necessary. According to Ware (1997, p. 91),

94. The phrase to 'put a fence around the Torah', which first appears in the first Mishna of the ancient "Saying of the Sages". The Mishnayot, known as the 'oral Torah', and basis of today's Rabbinic law, was redacted by Judah ha-Nasi at the end of the second century CE. Rabbinic law was visualised as a 'fence' to keep Jews from transgressing the commandments. It visualises preventing any other object of worship from entering sanctuary of the Lord.

95. John of Damascus testily argued for the oral tradition of imagery during iconoclasm, *"Since many things have been handed down in unwritten form in the Church and preserved up to now, why do you split hairs over the images?"* (John of Damascus, 2004, Trans. Louth, Treatise II; 16, p. 73)

96. *"And Jacob went out from Beer-sheba, and went toward Haran. And he lighted upon the place, and tarried there all night, because the sun was set; and he took one of the stones of the place, and put it under his head, and lay down in that place to sleep. And he dreamed, and behold a ladder set up on the earth, and the top of it reached to heaven; and behold the angels of God ascending and descending on it. … And Jacob awaked out of his sleep, and he said: 'Surely the LORD is in this place; and I knew it not.' And he was afraid, and said: 'How full of awe is this place! this is none other than the house of God, and this is the gate of heaven.'"* (Genesis 28: 10-19, KJV) Jacob was in "Paddan Aram" the area of Harran in Upper Mesopotamia, a few miles from Edessa (present day Urfa) where domical homes in earth have been built since before Jacob's time. He names the place, "Beth-el" (literally, "House of God"). Later, the Israelites' ark of the covenant contained the domical Baetyl or Qobba, which they carried with them on their migrations. (see Baldwin Smith, 1971, The Dome, pp. 71-74)

97. Plato's tradition (5C BC) was derived via the philosophia of Pythagoras (6C BC) and his Orphic lineage, and was inherited by Plotinus (3C AD).



FIG. 21 Above left: Mosaic of Jacob's dream, Monreale Cathedral, Sicily (11th century). On the opposite side of the cathedral nave is the detail of a ladder, similarly portrayed, but for a mosaic of masons building the tower of Babel (detail inset to the right for comparison). In the image of Jacob's dream to the left, one angel ascends and the other descends (in Dionysian manner) from the sleeping Jacob to an iconic portrayal of God (the rings of blue light centred on a hidden place, and represented by the divinised human as Christ). A nicely cut stone (kosmitis?) is under Jacob's head, and to the right, he is setting the foundation stones for the altar in the sacred location of his dream, according to the story in Genesis (28: 10-19). Photos by Author

FIG. 22 Below: 16th century frescoed icon of 'Jacob's Ladder' from the Old Testament, at Dionysiou Monastery on Mount Athos. The image of the Theotokos at the top of the ladder may allude to the Akathistos Hymn's greeting of her: "Hail, heavenly ladder by which God descended."
Available from: https://russianicons.files.wordpress.com/2020/07/klimaxtouiakob.jpg [Accessed: 12 November, 2021]



> Greek Christianity is heir to a double inheritance: to the Hebraic – biblical tradition, which is strongly holistic in its understanding of the human person and to the Hellenic – Platonist approach, which – without being strictly dualist, except in rare instances – makes a firm differentiation between soul and body.

The differentiation of soul from body could lead to a distinction between reality and the world of ideas, an ontological problem which has been inherited by us today.[98] In the 1st century, adjustments by Philo were necessary to change Aristotle's popular designation of the *hyle* as pre-existing, into God's creation, of his 'being' and thus indivisible from him.[99] The patristic Christian theologians worked their way towards a method for keeping the material, sensory world connected to the divine and heavenly one, and keeping the seen and the unseen on a connected continuum. The saving resolution came with the incarnation of Christ as the embodiment of God.

> In particular, the spiritual value of the human body is firmly underlined by the central event on which the Christian faith is founded: God's flesh – taking or incarnation. "The word became flesh" (John 1:14): in order to save humanity, God did not simply appear on Earth, but he took up into himself our human nature in its entirety, including a human soul and human body. (Ware, 1997, p. 94)

Christ's teachings, as 'the way, the truth, and the life', became an ascending path for a person who had already fallen into error and sin, while the descending path was God incarnating as Christ, coming down to earth. By establishing a firm connection, Christian theologians avoided the spiritual death of seperating soul and body, keeping the person whole.

It was the 5-6th century Dionysios the (Pseudo) Areopagite who synthesised the Jewish and Hellenistic traditions within a Christian context, reinterpreting the traditional Hellenistic levels through the Angelic Hierarchies and Divine Names in his Mystagogia (see Fig. 25). Lossky, (2005, p. 36) writes,

> It will naturally be asked what is the function of 'cataphatic' or affirmative theology, the theology of the 'divine names' which we find made manifest in the order of creation? Unlike the

98. See Chapter 5 for discussion of 'Reality and Imagination' (5.1, pp.289-290), and The Tangible Imagination (5.2, pp. 290-293).

99. Philo of Alexandria re-phrased aspects of Plato's *Timaeus* to remove conflict with the story of creation ex-nihilo in the book of Genesis. He corrected the popular perception of the *hyle* as a pre-existing matter. *"Thus six of the seven ideas created by God, according to Philo, on the first day of creation are the ideas of the four elements, the ideas of mind and soul, and the idea of the celestial bodies. This is indeed an interpretation of Genesis in terms of the Timaeus — not in terms of the Timaeus as it is written, but rather in terms of the Timaeus as it was understood by Philo. In the Timaeus as it is written there is no mention of an idea of mind and soul: there is reference there only to the ideas of the four elements, of which the idea of fire is mentioned explicitly, and also to the idea of the celestial bodies. Here Philo adds the ideas of mind and soul."* (Wolfson, 1962, p. 307)

Comparison of the hierarchies of the philosophers and their visual relationship with icons:

FIG. 23 Right above: Scheme showing three stages of Man in the Unverse according to Plato. This pre-Christan 'cosmology' continued to define the visual structure of icons, while the theology of Christianity effected a reinterpretation based on the redemptive incarnation of Christ who brought all three planes together. Redemptive icons will tend to show a centralised, unifying composition, however this hierarchy continued to represent a person's anagogic path and the crystallization of God's creative energy descending to earth.

Image from Temple (2001, p. 41)

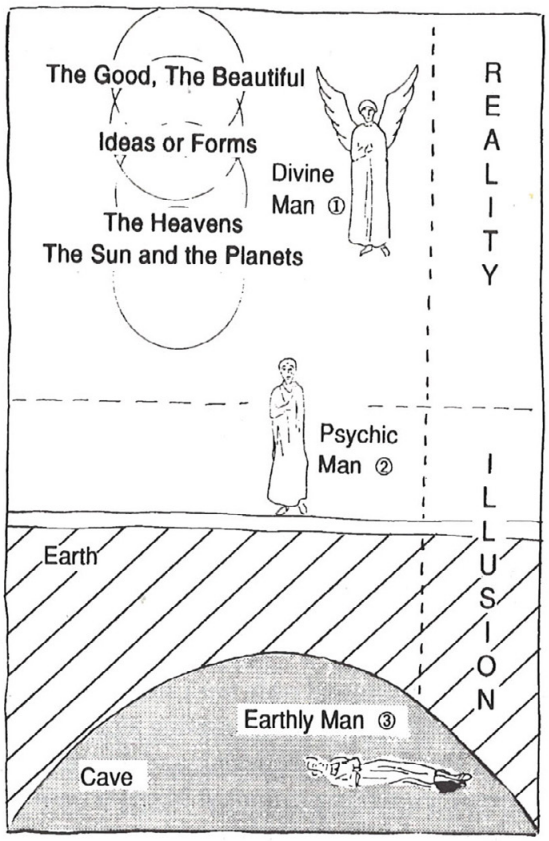


FIG. 24 Below right: Plotinus' 3rd century development on the hierarchy, with three hypostases. Image from Temple (2001, p.73)

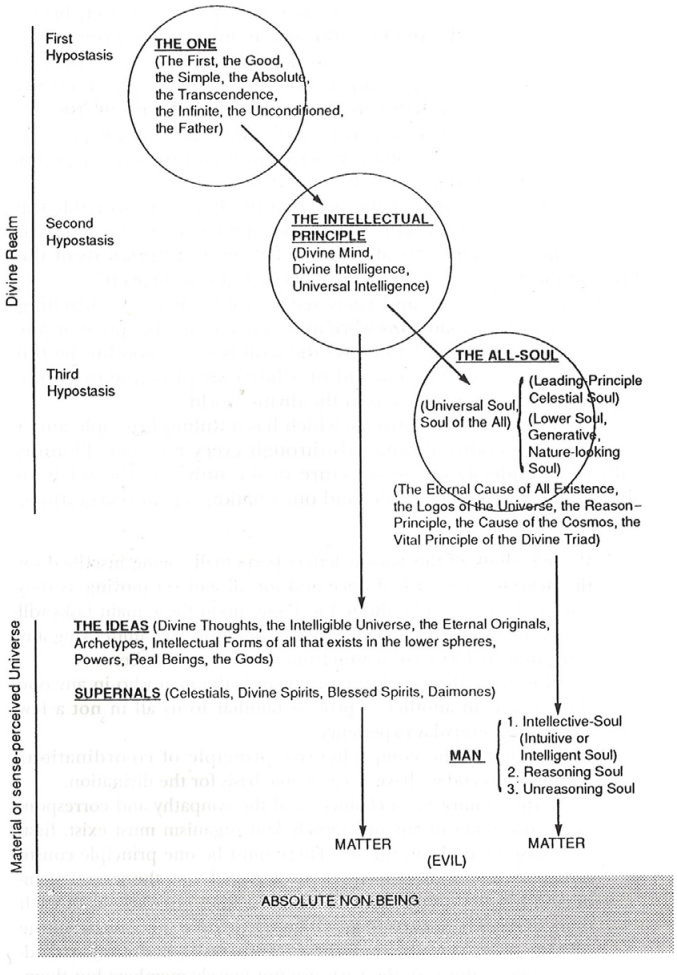


FIG. 25 Below left: Dionysios' 5th-6th century 'Nine Choirs of Angels' a hierarchy also known as the 'Divine Ray,' stages of creation from God.



> negative way, which is an ascent towards union, this is a way which comes down towards us: a ladder of 'theophanies' or manifestations of God in creation. It may even be said to be one and the same way which can be followed in two different directions: God condescends towards us in the 'energies' in which He is manifested; we mount towards Him in the 'unions' in which He remains incomprehensible by nature.[100]

Employing his neologism of *heirarchia,* the three hypostases of the neo-Platonic "Doctrine of Degrees" became Dionysios' 3 x 3 "nine choirs of angels" summarised as: (upper) Seraphim-Cherubim-Thrones; (middle) Dominions-Virtues-Powers; (lower) Principalities-Archangels-Angels, each with its attendant Divine Names. Dionysios explains in his *Celestial Heirarchy*,

> Hierarchy is, in my judgement, a sacred order and science and operation, assimilated, as far as attainable, to the likeness of God ... (Dionysios, CH Caput III; Section I, Trans. Parker 1897).[101]

Contemplation of the way that the divine realm with its archetypes is related to its earthly image was itself a method,

> The purpose, then of Hierarchy is the assimilation and union, as far as attainable, with God … (Dionysios 1897, HH I: II, p.)

He conceptualised this procession of levels as the 'Divine Ray' along the principle of 'as above, so below' and the Lord's prayer, 'Thy will be done, on earth as it is in heaven'.[102] Thus Dionysios' *Mystagogia* is not a simple proposition of an ascending ladder to heaven where descent to earth would be a fall again into error and 'sin'. Instead, he proposes that the devotee ascend and descend the ladder of apophatic and kataphatic/symbolic directions, through angelic hierarchies, until illusions are cleared and a consistent connection with God is made.

4.3.2 The Geometry of Philosophy and Theology. The Radiating Centre and Circle

The word hierarchy (ἱεραρχία) does not specifically mean only vertical levels, since the Greek word simply means a 'sacred order'. It could be vertical, horizontal, or spherical, relating centre and perimeter (see Figs. 26-28). Movement within it could be direct or spiral.

In the *Heavenly Hierarchy* Dionysios explains how the energetic illumi-

100. See Lossky, V. (2005) ***The mystical theology of the Eastern Church***. Cambridge: James Clarke & Co.

101. Dionysios generally uses the phrase 'the One' and rarely uses the word 'God' which his translators prefer.

102. My thanks to Temple (2001, p. 74) for thus connecting these two.



FIG. 26 Above right: Winter morning sunlight entering through some of the 12 windows around the dome of Hagia Sophia, Thessaloniki. The number 12 is a foundational geometry of this church. The 12 Apostles who are depicted in the Analipsis mosaic, are called 'the foundation of the church'. As holy persons they are also seen as windows admitting light into the 'naos', the body of the church.

Photo by Author.



FIG. 27 Above: Analipsis mosaic up in Hagia Sophia's dome, showing Christ in the centre above Mary; four archangels supporting them; and 12 apostles surrounding them. The triangulation of the archangels and Christ, and the archangels and Mary is superimposed in pink.

Photo and annotation by Author

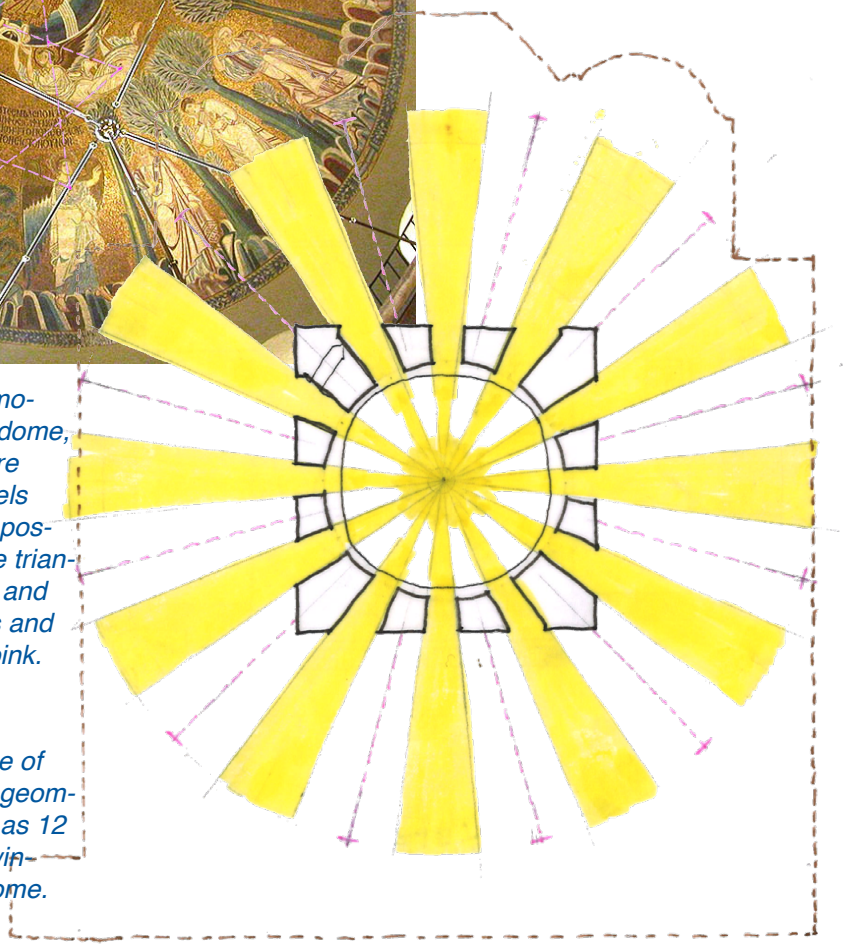


FIG. 28 Right: Ideogramme of the Divine Ray as circular geometry, the exchange of light as 12 light rays through the 12 windows in the drum of the dome.

Drawing by Author

nation from God spreads forth like a radiance and illuminates everything heirarchically,[103]

> "... let us contemplate the Hierarchies of the Celestial Intelligences revealed to us by them in symbols for our upliftment: and admitting through the spiritual and unwavering eyes of the mind the original and super-original gift of Light of the Father who is the Source of Divinity, which shows to us images of the all-blessed Hierarchies of the Angels in figurative symbols, let us through them again strive upwards towards its Primal Ray.[104] [...] For by the first Divine Ray we can be enlightened only is so far as It is hidden by all-various holy veils for our upliftment, and fittingly tempered to our natures ... (Dionysios 1963, pp. 21-22)

Dionysios makes much of the human need to be led 'through the sensible [sense-perception] to the intelligible' (Ibid. p. 149). He includes the lower spectrum of frequencies in the material world, which he calls symbols, on a continuum with higher frequencies of visible light and invisible energy that draw the human along the Divine Ray towards the source of all, the invisible Godhead.

> ….and having depicted the aforesaid immaterial Hierarchies in material figures and bodily compositions, in order that we might be borne, as far as our capacity permits, from the most sacred pictures to the instructions and similitudes without symbol and without type … for it is not possible for our mind to be raised to that immaterial representation and contemplation of the Heavenly Hierarchies, without using the material guidance suitable to itself ... in order that It (the Source of sacred mysteries) might lead us through the sensible to the intelligible, and from the inspired symbols to the simple sublimities of the Heavenly Hierarchies. (Dionysios 1897, HH I: III, pp. 148-149)

He explains the methodology in his *Mystagogia,* which is highly condensed and abbreviated, and in his other texts which are more diffuse.[105] Dionysios set the foundation of the method of Christian apophatic and symbolic theology

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103. It is Dionysios' Heavenly Hierarchies in particular which establishes within a Christian context, the neo-Platonic Doctrine of Degrees. It becomes the 'nine choirs of angels' summarised as: (upper) Seraphin-Cherubim-Thrones; (middle) Dominions-Virtues-Powers; (lower) Principalities-Archangels-Angels.

104. Here I have used the Shrine of Wisdom translation. The text continues, *'For this Light can never be deprived of Its own instrinsic unity, and although in goodness, as is fitting, It becomes a manyness and proceeds into manifestation for the upliftment and unification of those creatures which are governed by Its Providence, yet it abides eternally within Itself in changeless sameness, firmly established in Its own unity, and elevates to Itself, according to their capacity, those who turn towards It, as is meet, uniting them in accordance with Its own unity.'* (Dionysios 1965, p. 21)

105. The works of Dionysios which have survived are: Divine Names (Περὶ θείων ὀνομάτων); Celestial Hierarchy (Περὶ τῆς οὐρανίου ἱεραρχίας); Ecclesiastical Hierarchy (Περὶ τῆς ἐκκλησιαστικῆς ἱεραρχίας); Mystical Theology (Περὶ μυστικῆς θεολογίας), "a brief but powerful work that deals with negative or apophatic theology and in which theology becomes explicitly "mystical" for the first time in history"; and Ten epistles.

which goes something like this:[106] From "the One" emanates creation via celestial hierarchies, divine names, and visual symbols, finally reaching the tangible earthly world; each stage of the 'widening' or descending hierarchy accumulates more defining characteristics which make it more solid, and each stage mirrors the adjacent one (see Figs. 37, 38). A returning path exists within this hierarchy of creation from the visual symbols, through the divine names, and celestial hierarchies to "the One"; contemplation that God is not any of these leads to action that confirms it, "For everything is established by being put into practice".[107]

Dionysios never compromises the principle, "that one God is the universal source of the emanations" (DN Ch. 5; Section II). This method draws the initiate (*mystis*) repetetively towards God into the inner heart of the unseeen realm and outward though divine names among symbols to to the 'far shores' of creation, being present in this earth, just as the liturgy is repetitively experienced.[108] This repeated process of active contemplation clears away illusion and clarifies "the beautiful and unconfused good order with regard to the divine receptions"(Dionysios, CH, Trans. Parker, 1897, VIII: I). Towards the end of the text he writes that a "discriminating mind" would not have "any difficulty in properly adapting [finding correspondance of] things visible to things invisible"(Ibid, XV: V). When this theology of hierarchy transfers to the icon, it becomes an interface for connecting outer vision and inner vision.

Maximos the Confessor continued Dionysios' work in his own *Mystagogia*, which presents its relationship with the church as we have seen,

106. *'What are the affirmative expressions respecting God, and what the negative: In the other case, the discourse, in descending from the above to the lowest, is widened according to the descent, to a proportionate extent; but now in ascending from below to that which is above, in proportion to the ascent, it is contracted, and after a complete ascent, it will become wholly united to the unutterable.'* (Dionysios, MT, Caput III, Section I, p.92 Trans. Parker, 1897)

107. St. Mark the Ascetic, (1983) *Philokalia 1*, Trans. Palmer et Al., In: No Righteousness by Works #12, p. 126, London: Faber & Faber

108. Dionysios' translator, the Revd. John Parker (1897), gives an summary introduction using the metaphor of the ladder, *" Mystic Theology is like that ladder set up on the earth whose top reached to heaven on which the angels of God were ascending and descending, and above which stood almighty God. The angel ascending is the negative which distinguishes Almighty God from all created things. God is not matter, soul, mind, spirit, any being, nor even being itself, but above and beyond all these. The angel descending is the affirmative. God is good, wise, powerful, "the Being". Until we come to symbolic theology which denotes him in material forms and conditions. Theology prefers the negative because Almighty God is more appropriately presented by distinction than by comparison."* Dionysios' type of philosophic contemplation should not be confused with the anagogic method of the early Christian mystic St. John Climacus (560-850), abbot of St. Catherine's monastery in Sinai, though these are related. His book, the Ladder of Paradise teaches practices to raise human consciousness from a fog of illusion and confusion up to union, as far as possble, with God. Jacob's ladder and Dionysios' contemplation link the earthly symbol and the divine source assuming a "clear and unconfined transmission" which works in both directions.

> For the whole spiritual world seems mystically imprinted on the whole sensible world in symbolic forms, for those who are capable of seeing this, and conversely the whole sensible world is spiritually explained in the mind in principles which it contains. In the spiritual world it is in principles; in the sensible world it is in figures. And their function was like a wheel within a wheel, as says the marvellous seer of extraordinary things, Ezekiel, in speaking, I think, of the two worlds. (Maximos, Ch. 2, p. 189)

For Dionysios there is a circular motion of the angelic orders of Seraphim "established around God" with their "ever moving around things Divine" in an "inflexible perpetual motion" (Dionysios, CH VII: I), referring to a centre that is beyond physical,

> For some of its members, to speak after sensible perception, proclaim as a "voice of many waters", "Blessed is the glory of the Lord from His place" and others cry aloud that frequesnt and most august hymn of God, "Holy, holy, holy, Lord of Sabaoth, the whole earth is full of His Glory!'" (Dionysios, CH VII: IV)

Through the concept of the 'Divine Ray' an abstract, intellectual and spatial structure emerges in Dionysios' and Maximos' writings, which informed Christian iconography and architecture from the 6th century onwards.[109]

These theological geometries and movements are to be found in the iconography of the mosaics of the Analipsis and the Theotokos in Hagia Sophia. Vertical and concentric (spherical) geometry is implied and the building itself projects this simultaneous geometry in three dimensions (see Figs. 26-28, 38-39).

By the 8th century, the long, difficult theological journey of the early church fathers had reached a plateau of stability, around the time that Hagia Sophia, dedicated to divine 'wisdom', was constructed in Thessaloniki. This philosophical-theological topology forms the basic geometry underlying orthodox icons. Whether we study the aniconic mosaics of Hagia Sophia or the later figurative mosaics, there is a spatial theological relationship to the figures. Through this method, Orthodox iconography guides the beholder to a *topos* and a *chora* in the world of the intellect, and beyond to divine union. But this is only part of the series of layers that make up the map of the icons.

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109. We can see, in outline, the same ancient system of similitudes brought into the 20th century by philosopher Michel Foucault as convenientia, aemulatio, analogy, and sympathy. In Dionysios' hierarchy of the 'Divine Ray' we can find the "reversibility and polyvalency" of Foucault's figure of analogy which superimposes the chain of convenientia and the mirroring of aemulatio; convenientia whose links "appear as a rope stretched from the first cause as far as the lowest and smallest of things", and aemulatio that "series of concentric circles" whereby "by duplicating itself in a mirror the world abolishes the distance proper to it" (Foucault, 2002, pp. 21-24). One can compare aemulatio with the anafora, 'being borne up' or 'offering up', of the image to the prototype. As for sympathy, perhaps one can say that the ray's connections and distinctions unfold through sympathy and antipathy.

4.4 Astronomy and cosmology in the topology of the Divine Ray

Iconography overlays the theological hierarchy of the Divine Ray with other layers of meaning. One of these is a cosmological landscape derived from astronomy, according to tradition. The other is a narrative layer consisting of prophetic stories - the life of Christ, of the prophets and saints, which is interwoven with astronomy. Some figures are singled out as guiding "heirarchs", such as the figure of Christ, the Holy Mother, the apostles and fathers of the church.

Astronomy and cosmology connect the spatial arrangements of icons to more recognisable symbolic forms than the abstract principles provided by theology and philosophy. It can be argued, as anthropologists Duchend and de Santillana (1969) do, that astronomy is the first science preceding theology and that it became woven into the evolving Christian culture.[110] The 'Great Treatise' of the mathematician-astronomer Ptolemy of Egypt (c. 100-170 AD), for example, was highly influential in Byzantine scholarship. Though it appears to discuss geographic knowledge of the *oikoumene*, the inhabited world,

> ... geography in our sense was never meant, but a cosmography of a kind needed even now by navigators. Ptolemy, the great geographer of antiquity, had been thinking of nothing else. His Geography is a set of coordinates drawn from the skies, and transferred onto an uncouth map of our globe ... (De Santillana, 1969, p. 63)

All peoples who observed the movement of the heavenly bodies, stars and planets, for navigation on land and sea, calculated a spatial-numerical icon of the universe and could predict its movements. This became a map with which to understand the passage of time in relation to space, and to posit a relation to human events within time and beyond it.[111]

> On the zodiacal band, there are four essential points which dominate the four seasons of the year. They are, in fact, in church liturgy the quatuor tempora marked with special abstinences. They correspond to the two solstices and the two equinoxes. ... Those four points together made up the four pillars, or corners, of what was called the 'quadrangular earth.' ... 'earth', in the most general sense, meant the ideal plane laid through the ecliptic; meanwhile we are prepared to improve the definition: 'earth' is the ideal plane going through the four points of

110. Astronomy was highly evolved and respected with deep, ancient roots in the cultures of the Roman empire. For millenia, the Mesopotamians, Phoenecians, and Egyptians were renowned for astronomy. Greeks, too had been observing 'the Royal Science' since ancient times.

111. The journey of a celestial protagonist, between the subterranean darkness of absolute non-being to the transcendent goodness of God beyond the heavens, was derived from the movement and position of the stars and planets. Examples such as Gilgamesh, Osiris, Theseus, Odysseus, Jonah, Moses, Christ, Ali and others became a model for the human journey that is both physical and spiritual.

the year, the equinoxes and the solstices. (De Santillana & Von Dechend, 1969, p. 62)[112]

This spatial description of time through astronomy allowed humans to contemplate their place in this universe, both literally when navigating, and philosophically. The earth as a reflection of the heavens is portrayed as the landscape on which the narratives take place in icons. Astronomy gave theologians tangible parameters with which to present their work. Thus the hierarchy whereby God is reflected in matter becomes the field (*chora*) where man and God meet. The predictable motion of the constellations rotates like a wheel around a central point indicating the Source of all, though indirectly as a symbol.[113] The central axis is the one along which the human being travels in his journey toward the source, which is God. This celestial map is reflected into the unstable fluidity of earthly matter. Thus any centre is a reflection of the idea of what is unchanging and eternal within that shifting, shape-changing, constantly metamorphosing plane of materiality.

4.4.1 The miraculous icon of Christ in Glory

The 5th or 6th century mosaic of Christ in the apse of Hosios David at Latomou monastery reveals these principles of iconographic composition, and illustrates this wheel of the heavens by the edges of the mandorla of the Divine Ray (see Fig. 29).[114] Its spatial composition can also be considered geometrically related

112. The full quote is long, yet it contains important additional information: *'On the zodiacal band, there are four essential points which dominate the four seasons of the year. They are, in fact, in church liturgy the quatuor tempora marked with special abstinences. They correspond to the two solstices and the two equinoxes. The solstice is the 'turning back' of the sun at the lowest point of winter and at the highest point of summer. The two equinoxes, vernal and autumnal, are those that cut the year in half, with an equal balance of night and day, for they are the two intersections of the equator with the ecliptic. Those four points together made up the four pillars, or corners, of what was called the 'quadrangular earth.' This is an essential feature that needs more attention. We have said above that'earth', in the most general sense, meant the ideal plane laid through the ecliptic; meanwhile we are prepared to improve the definition: 'earth' is the ideal plane going through the four points of the year, the equinoxes and the solstices. Since the four constellations rising helically at the two equinoxes and the two solstices determine and define an 'earth,' it is termed quadrangular (and by no means 'believed' to be quadrangular by 'primitive' Chinese, and so on). And since constellations rule the four corners of the quadrangular earth only temporarily, such an 'earth' can rightly be said to perish, and a new earth to rise from the waters, with four new constellations rising at the four points of the year.'* (De Santillana & Von Dechend, 1969, p. 62)

113. The wobble in the earth's axis over a 26,000 year period alerted the most observant ancient astronomers to the fact that the earth too is moving and rotating. Thus the celestial map could be drawn with the subjective human point of view in the centre, but this must be taken as an image or symbol for the place of the eternally unchanging God, rather than the place itself.

114. According to the early 9th century testimony of St. Joseph the Hymnographer, this mosaic of Christ arriving in glory was re-discovered in Thessaloniki's Latomou monastery by St. Senufios, as a 'miraculous gift' of the earthquake of 813-20. The earthquake, whose epicentre was in Thessaloniki shook the covering off the 5th century mosaic which had been hidden during the previous century of iconoclasm. The spatial composition of the mosaic has a relationship with that of the cross-domed core that had been replacing the interior of the old basilican churches in the Transitional period.



FIG. 29 Above: 6th century Mosaic of Christ in Glory, Latomou Monastery - Hosios David - Thessaloniki. As if materialising on a veil, He is at the centre of a domed emanation of the divine light, which crystallises as rainbows which illuminate the earthly creation which is surrounding. The 'four pillars of the liturgical year', are placed like four pendentives around a dome. On the one hand is the inspired Ezekiel to the left and on the other the studious Habakkuk to the right.

Photo by author.



FIG. 30 Left: Icon of Christ, crypt museum of the church of Alexander Nevsky, Sofia. A 14th century copy of the miraculous 6th century 'acheiropoeiton' apse mosaic of Hosios David in Thessaloniki. Christ is at the centre of emanation, being himself the 'Divine Ray', coming to earth and being borne up again to the heavens. He is surrounded by the emblems of the four evangelists, the 'four pillars of the liturgical year.' These are the four constellations in the sky at the solstices and equinoxes: the Bull (Taurus), the Lion (Leo), the Eagle (directly above Scorpio), and the Human (Aquarius). Below, the horizon line, a more naturalistic representation of the earth as mountain, opening to the cave with the waters of the deep below containing fishes.

Image from Cormack (1997, p. 143)

to Hagia Sophia's figurative dome mosaic. In the Latomou mosaic, just as in the corresponding icon (Fig. 30), the four 'corners' of the 'quadrangular' earthly plane are given the figures of constellations; the bull (Taurus, spring), the lion (Leo, summer), the eagle (above Scorpio, autumn) and the human (Aquarius, winter).[115] The heavens are reflected below in the quivering cuboid mountains (the earth) whose depths open to reveal the waters of the abyss containing a congregation of fishes. These are a reference to the Christians themselves, and to rising 'age of Pisces' noted by astronomers at the time of Christ.[116]

In this icon we find the path of the Divine Ray presented for contemplation as the person of Christ. Christ is depicted semi-standing, semi-seated on a rainbow, with one hand raised in blessing and the other holding a scroll of prophesy, 'revealing the scripture'. Contemplating the geometry of centre and perimeter: The hypostases of God - as 'father', Christ-Logos (the 'son' compassionately come to earth in the flesh), and the life-giving Holy Spirit, being a differentiation of persons but a single 'absolute beingness' according to Trinitarian theology, take the central place. Within a radiant sphere of emanating divine light, Christ's person crystallises in earthly form in the central place; the sphere lies between the 'four pillars of the quadrangular earth' represented by the evangelists' zodiacal figures holding their gospels. Contemplating the vertical geometry: Between the apex of the apse and its broad base, Christ's figure forms a vertical 'divine ray' spanning a natural landscape from the heavens, through a realm of clouds and rainbows, to mountains, cities, human life, cave, and the lowest level of the waters of river and ocean; on either side are Ezekiel recieving

115. In Christianity these were also given the figures of archangels for the four elements, and became associated with the four evangelists.

116. The movement of the equinoctial sun into the constellation of Pisces, was hailed as the beginning a new age of 2,200 years for the earth, according to the precession of the equinoxes. For the early Christians, this event was marked by the incarnation of Christ. Thus the fish became the sign whereby one Christian recognised another. Regarding the precession of the equinoxes: *'The sun's position among the constellations at the vernal equinox was the pointer that indicated the "hours" of the precessional cycle—very long hours indeed, the equinoctial sun occupying each zodiacal constellation for about 2,200 years. The constellation that rose in the east just before the sun (that is, rose helically) marked the "place" where the sun rested. At this time it was known as the sun's "carrier," and as the main "pillar" of the sky, the vernal equinox being recognized as the fiducial point of the "system," determining the first degree of the sun's yearly circle, and the first day of the year. (When we say, it was "recognized," we mean that it was spelled "carrier" or "pillar," and the like: it must be kept in mind that we are dealing with a specific terminology, and not with vague and primitively rude "beliefs.") At Time Zero (say, 5000 b.c.—there are reasons for this approximate date), the sun was in Gemini; it moved ever so slowly from Gemini into Taurus, then Aries, then Pisces, which it still occupies and will for some centuries more. The advent of Christ the Fish marks our age. It was hailed by Virgil, shortly before Anno Domini: "a new great order of centuries is now being born ..." which earned Virgil the strange title of prophet of Christianity. The preceding age, that of Aries, had been heralded by Moses coming down from Mount Sinai as "two-horned," that is, crowned with the Ram's horns, while his flock disobediently insisted upon dancing around the "Golden Calf" that was, rather, a "Golden Bull," Taurus.'* (De Santillana, 1969, pp. 59-60)

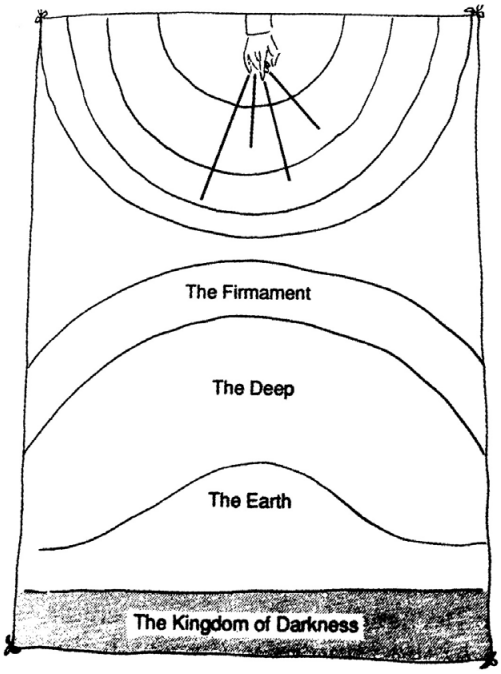


FIG. 31 Top left: Diagram of the universe according to Christian Cosmology, based on Cosmas Indicopleustes' Christian Topography.(Temple 2001, p.103).

FIG. 32 Miiddle Left: Cosmas' Indicopleustes' diagram of the universe. The arched vault of heaven is set above cuboid earthly co-ordinates, within which the sun is shown in both easterly and westerly positions, along the earth (mountain) and the waters below. The firmament is at the meeting of the vault and the lower region. (11th century, Codex Sinaiticus graecus 1186, St. Katherine's monastery, Sinai).

FIG. 33 Miiddle Right: Cosmas Indicopleustes' 2-dimensional diagram of the universe with the mountain in the middle, between the showing the arc of the heavens above the firmament or 'stereoma', the mountain of the earth in the middle, and the 'oceanos' below (aka kingdom of darkness) (Indicopleustes 1909, Pl. 2).

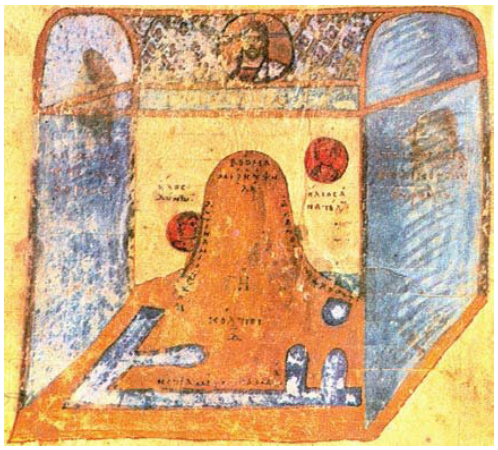
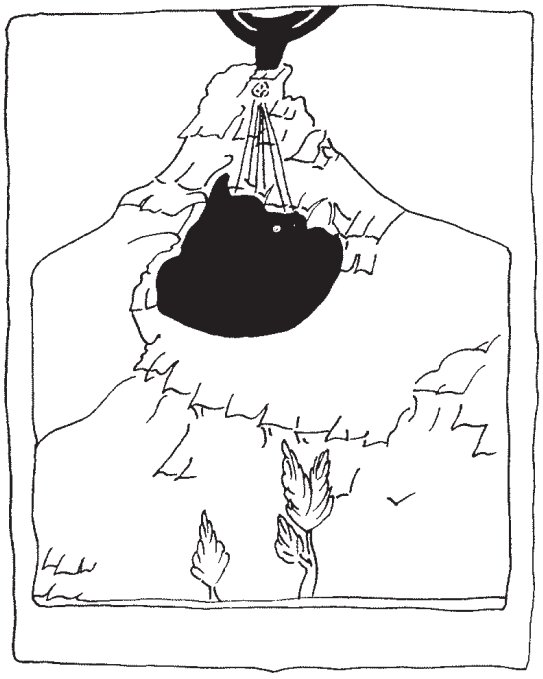




FIG. 34 Below: Analysis of the background of a Nativity icon, its repeatiing patterns of topology is the cosmic landscape according to Cosmas (Temple 2001, p. 128)





his vision and a thoughful Habakkuk with codex, giving the mosaic a right-left polarity and relationship. [117]

The composition of this mosaic helps us to understand the theme of astronomy in Hagia Sophia's mosaics because the same features occur in the *analipsis* dome mosaic. It's symbolism and spatial geometry reveal the continuity of spatial astronomy, cosmology, theology, and philosophy in the science of iconography.

4.4.2 Cosmology, landscape and vaultings

Evidence for this way of visualising the cosmos and the 'quadrangular earth' can be found in the *Christian Topography* of Cosmas Indicopleustes written between 547-550 AD.[118] His work often reads as an entertaining travelogue, and his diagrams may appear childish to us, but he is in fact illustrating his journey with cosmological diagrams related to navigation, fused with Christian theology. In doing so he sanctified the *oikoumene* in Christian terms, attributing divine parameters to the tangible landscape. His diagrams illustrate the Divine Ray of Dionysios as a metaphysical landscape (God's creation), while making biblical references.[119] These show us how the pictorial symbolism of Christian iconography is formed (see Figs. 31-33). The logic by which the landscapes of icons is derived is not visual imitation, but it allows the natural landscape to be a symbol.[120]

These symbolic landscapes of the Divine Ray locate the human being's place in the universe and in the terrestrial world. They provide repeating patterns of topology, on which are positioned stories drawn from the gospels or the lives of saints, and sometimes from the Torah (see Fig. 34). The prophetic stories indicate a path within the icon, designed to uplift or 'awaken' the sleeping human being. Divine or saintly persons may even become the topology itself, such as

117. The same elements of spatial design, or cosmic geometry, have been applied in a flexible format, in 16th century Cretan portable icon (Fig. 30), with the same theme and format as the Latomou mosaic. This shows how the geometry translated from a curved surface to a flat one.

118. Κοσμᾶς Ἰνδικοπλεύστης - the 'one who sails to India'. In it, this Nestorian Christian monk and former merchant from Alexandria during the reign of emperor Justinian, describes his voyages throughout the inhabited world (the oikumene). The dates have been deduced by events referenced in his text.

119. Such as the first book of Genesis, and the description of the tabernacle

120. The topography of ideas in Byzantine icons, presented through the concept of the Divine Ray locates the unknowable divine potential of God beyond the image. From there, its kinetic energy manifests as a ray of light descending to create the heavenly and celestial spheres (noetic, arch-angelic and angelic world), and further down past the firmament (steroma) it crystallises into earth (mountain, matter), mankind (human story), the chora within the earth (cave, plaza between buildings), and the waters of the abyss (kingdom of darkness, absolute non-being) at the bottom.



FIG. 35: Top left - Icon of the Nativity (Byzantine, 15th c.) in the Benaki Museum, Athens,



FIG. 36 Bottom left - author's verbal analysis of same icon.

Note: The focus of the action is in the cave. The Divine Ray emanates from off the top of the image, through the dome of the starry heavens, past the choirs of angels (vision and sound in a realm beyond 'mortal eyes and ears', splitting open the mountain to reveal the chora. The birth of Christ in the cave indicates God's incarnation in the same earthly realm in which other human protagonists live. At the bottom of the scene the midwife pours out water to wash the child, a visual portryal of its sound and a symbol of the waters that surround the cosmos.

the Theotokos and Christ child in Hagia Sophia's apse (see Fig. 41). In icons, time, space and three dimensions do not abide by the conventional rules (see Fig. 27); they observe the topology of Divine Ray,

> ... in the same iconographic space, different episodes can be inserted that are related to the same event without taking their sequence in time and space into account. In the Nativity of Christ, the Child appears twice for instance. He is shown both lying down next to the Virgin Mary and also being washed by the midwives. (Sophocleous 1998, p. 43)

The divine ray emerges from beyond the clouds and penetrates an enclosure. Its beam of light is accompanied by angels and penetrates into the cave in which Christ is born (see Figs. 35-36); it splits aside mountains and makes a space in the mountains called the *chora*. The Ray may be understood as the energy of the annunciation between the angel Gabriel and Mary, entering between the buildings (substitutes for the mountains) which are partly closed on one side and and partly open to the interior on the other. The energy of the Ray may become the hierarchy of symbols as in the icon of St. George, or materialise into Christ's body with mountains either side and the waters at his feet, as in the icon of his baptism. The details change with the stories, but the same underlying topology is ever present with its standardised landscape.

4.5 Aspects of Hagia Sophia's mosaics that translate into the masonry architecture:

4.5.1 The *Analipsis* (Ascension) Mosaic

The same earthquake of 813-20, that revealed the 5-6th century mosaic in Latomou monastery, is thought to have damaged Hagia Sophia's central dome requiring the reconstruction of both the dome and its aniconic mosaics.[121] After iconoclasm ended in 843 it would have been possible to replace an aniconic mosaic with a figurative one. Two themes were chosen for Hagia Sophia's iconographic mosaics: the *Theotokos* who brings the message of the Incarnation and victory (as the *nicopoeia*), and the *Analipsis* (the ascension of Christ preceding Pentecost). These were among the twelve or more scenes which had earlier been enumerated by the apologists for icons such as John of Damascus.[122] The under-

121. This timing is according to Velenis (1997, pp. 71-72), and other scholars who beileve that a first dome was completed in the late 8th century. Structurally speaking though, since the dome's supporting structure of the bounding arches and 'broad' vaults were not damaged, there are very few reasons why a dome should fail. One would be a lack of buttressing around a base that is perforated with a high window to wall ratio, leading to a 'soft storey' effect.

122. Pelikan (1990, p. 86) reminds us that by the 6th century a cycle of twelve feasts, based on the life of Christ, had developed around the twelve months of the liturgical year, though it was *'probably not earlier than the tenth century ... that the Byzantine church officially adoped such a cycle for the church year.'* The later adoption of this cycle of icons to celebrate of the twelve months of the liturgical year would have further brought together the iconography and architec-



FIG. 37 Top Left: Frescos from Hagia Sophia, Trabzon showing an explosion of the 'divine ray' from above, mediated by 4 archangels. The ray materialised in figurative frescos down the walls (not extant) and ends in the 'real world' at ground floor level.

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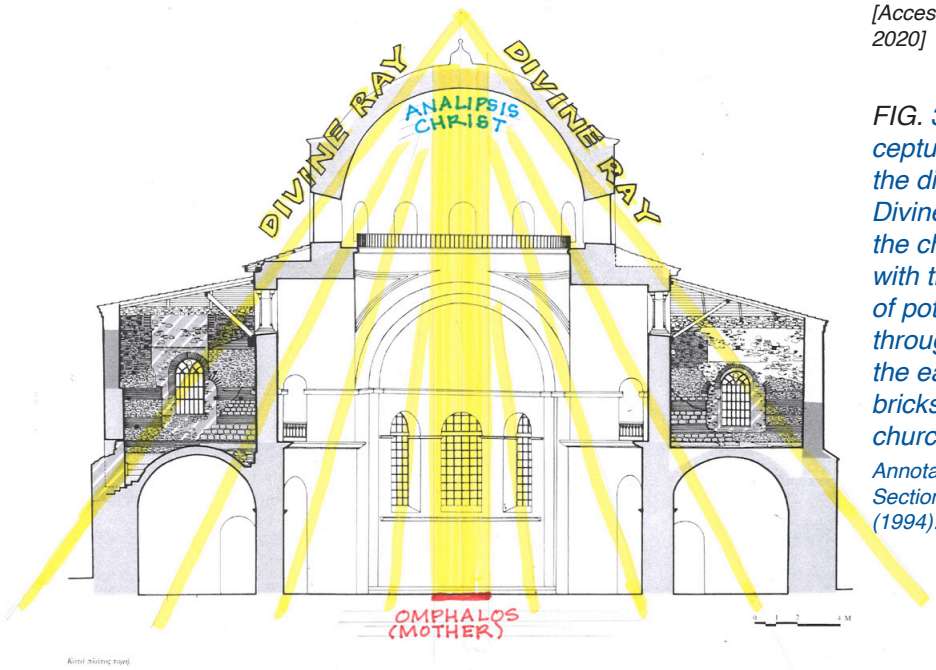


FIG. 38 Mid Left: Conceptual diagramme of the distribution of the Divine Ray's energy in the church, co-inciding with the distribution of potential energy through the weight of the earth (stone and bricks) of the masonry church.

Annotations by author on Section by Theoharidou (1994).

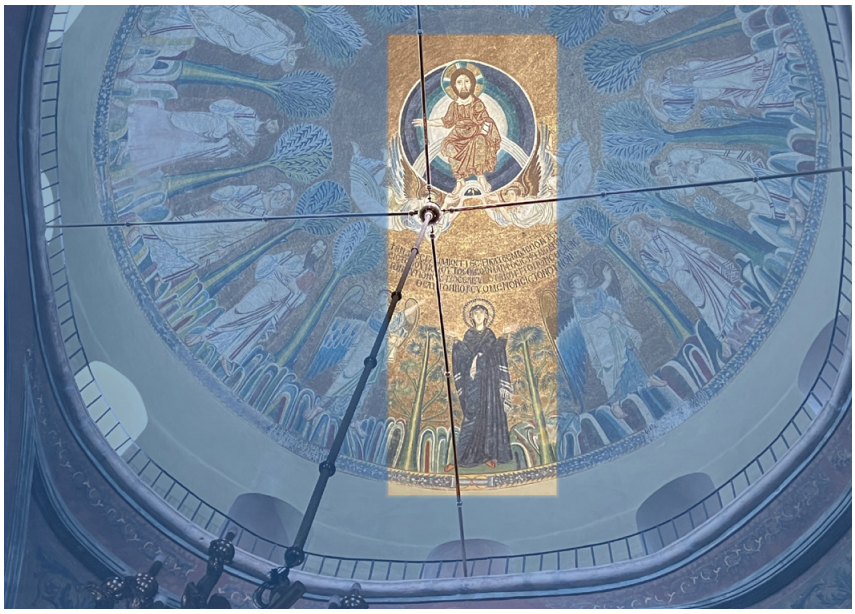


FIG. 39 Bottom Left: Detail of the Analipsis (ascension) mosaic in Hagia Sopia's dome. The vertical axis between Christ at the apex and the Holy Mother standing on the earth in the mosaic, is a reiteration of the vertical axis between the central apex of the dome and the central point of the omphalos on the floor of the church. (see FIG. 9)

Image by author.

lying formula of both of Hagia Sophia's mosaics has remained typical since the restoration of icons in the 9th century. It is this formula that provides its underlying structure which is translatable into spatial and architectural structure.

Looking first at the *Analpsis* mosaic, we can see the same hierarchy and depiction of astronomy and theology analysed in the preceding sections. Here, the relationship between the celestial and the earthly takes the form of a Divine Ray emanating from a mandorla behind Christ, through him and then descending down to the Holy Mother (see Fig. 39, and also Figs. 17, 19-20, 27)).[123] The mandorla of light represents the circular geometry that Dionysios described in his theology of centre and perimeter. It places God at the centre of a radiant sphere of emanating divine light, and here in Hagia Sophia's mosaic the person (hypostasis) of Christ is at the central point. His figure both veils the 'place of God' at the centre and is identical to this place.[124] His image and likeness is being borne up into the mandorla's apophatic heart. Similarly to the Latomou mosaic, Christ is depicted semi-standing, semi-seated on a rainbow, with one hand raised in blessing and the other holding a scroll, 'revealing the scripture'. The Divine Ray's vertical hierarchy, emanating from the heart of the radiant sphere, descends in the line of Christ's body to the line of the Holy Mother below.[125] The artists have beautifully arranged the mosaics within the dome so that its 'double curvature' structure, which is both vertical and concentric, is captured by the concentric figure of the rays between Christ and the apostles and the vertical ray between Christ and the Holy Mother.[126]

The 'four pillars of the quadrangular earth' are shown in the four angels.

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ture into the human space.

123. *'At Time Zero, the two equinoctial "hinges" of the world had been Gemini and Sagittarius, spanning between them the arch of the Milky Way: both bicorporeal signs—and so were Pisces, and Virgo with her ear of wheat, at the two other corners—to mark the idea that the way (the Milky Way itself) was open between earth and heaven, the way up and the way down where men and gods could meet in that Golden Age.'* (De Santillana, 1969, p. 63)

124. *' ... this icon has a sense of everything being gathered together in Christ.The many within the horizontal are swept up into the one Christ.'* (Hart, 2022, p. 332)

125. *'At Time Zero, the two equinoctial "hinges" of the world had been Gemini and Sagittarius, spanning between them the arch of the Milky Way: both bicorporeal signs—and so were Pisces, and Virgo with her ear of wheat, at the two other corners—to mark the idea that the way (the Milky Way itself) was open between earth and heaven, the way up and the way down where men and gods could meet in that Golden Age.'* (De Santillana, 1969, p. 63) Though the icon depicts only the radiant golden dome surface between Christ and His mother, those who were aware of its astronomy could read the whole of creation between them, here representing the liturgical year.

126. *'When You had fulfilled the dispensation for our sake, / and united earth to heaven: / You ascended in glory, O Christ our God, / not being parted from those who love You, / but remaining with them and crying: / "I am with you and no one will be against you!"'* Kontakion — Tone 6, The Ascension of our Lord, [https://www.oca.org/saints/troparia/2014/05/29/42-the-ascension-of-our-lord]



FIG. 40 Above: Relationship between the Analipsis mosaic's four archangels and the four piers of the naos. We do not know the original design on Hagia Sophia's pendentives, however, four archangels are frequently chosen, as can be seen in Hagia Sophia, Constantinople. The piers and pendentives can be seen as the military angels of the Theotokos, placed 'in very secure formation like generals and commanders of tagmata' according to described by Constantine of Rhodes (In: James, 2012, p. 61). (The bright pink square in the sketch is located at the omphalos central to the square base of the blue piers.)

Collage composition by author.

The two next to Christ are mirrored by the two next to the Holy Mother, spanning a relationship between the celestial and the earthly, which is unified by the event of the ascension of Christ and descent of the Holy Spirit. Evdokimov points out that, 'The angels' raised hands and the Virgin's feet form the three points of a very regular triangle' and that the geometry of the triangle 'visibly expresses the image of the Trinity' (Evdokimov, 2011, loc. 5262 of 6421).[127] The mosaic also expresses the symmetry of the ascent of Christ and the descent of the Holy Spirit in two triangles, whose geometry of 6 is that used by the masons to set out the building (see Fig. 27). The positions of the four archangels as the four corners of solstices and equinoxes depict the unity of the wheel of the year, its 12 constellations and 4 seasons.[128] Around the central point of Christ are the twelve apostles who figuratively represent the twelve constellations of the year in the skies.[129] This geometry of 1, 4, 6, and 12, is used to construct the church with the *omphalos* (the surveyor's *umbilicus*) at the central point generating six and then twelve radial directions. From the twelve is derived four. These fix in place the four massive 'perforated' piers defining the earthly *chora* of the *naos*.

In the mosaic, it is Christ's navel that is in the centre above the *omphalos*- the navel of the building in the earth. On a line between the upper and lower *omphalos*, there is the geometric centre of the dome, 'hidden in plain sight', representing both the uncreated and unmanifest and the point of manifestation used by the masons as a reference to construct the physical dome of the church. It is to and from this unmanifest centre that the sound of chanting would travel if the choir were to ascend to the balcony that rings the dome.[130] The combined symbolism of the mosaic and the twelve windows around the dome remind us that the apostles are the bearers of light. Also, their position in the mosaic standing on the earth and encircling the vertical axis between Christ and the Holy mother, makes them an earthly reflection of the heavenly bodies. The vertical axis in the analipsis mosaic is reiterated in the space of the church by the axis between the apex of the dome and the omphalos, the maternal connection to the earth (see Fig. 9).

127. Here, Evdokimov is referring to an Ascension icon of the same thematic type, that 15th century of the Andrei Rublev school. The triangular geometry does occur in the dome mosaic of the Ascension in Hagia Sophia, with a slightly different emphasis on the figures (see Fig. 27).

128. This is naturally related to the cycle feasts currently celebrated throught the year in the Orthodox church, and also to the stational liturgies which celebrated an annual cycle in locations throughout the city, 'under the heavens'.

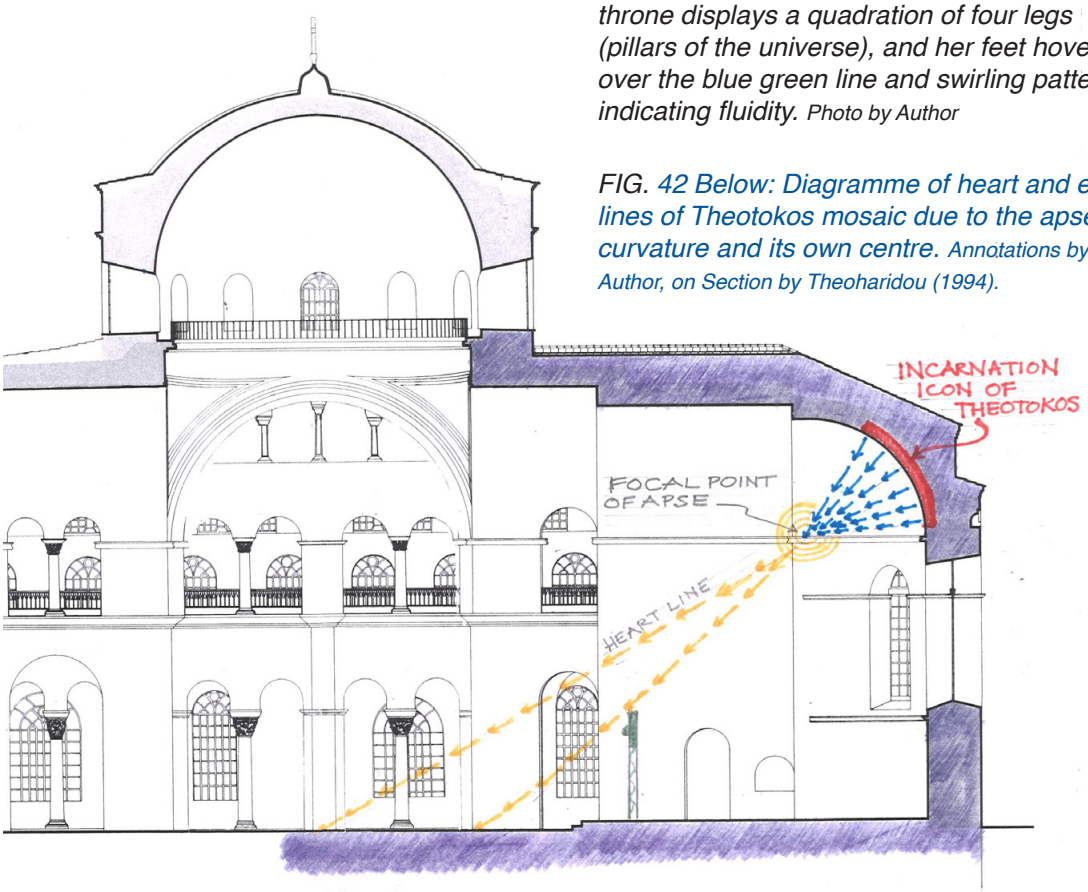
129. Any window admitting light could represent as a holy person, since the apostles and saints were seen as windows of light in themselves. The Sougitha establishes their earthly-celestial relationship in the 'Great Church' (Hagia Sophia), Edessa, thus: *'The Apostles, who are His foundations in the Holy Ghost, the Prophets and the Martyrs are schematically represented in it. May their memory abide in the heavens above by the prayer of the blessed Mother!'* (In: Mango, 1972, p. 59).

130. See Chapter 3 (pp. 200-201) on liturgy for a description of the 14th century Feast of the Elevation of the Cross in Hagia Sophia, Thessaloniki.



FIG. 41 Above: Mosaic of the Holy Mother as 'Theotokos Platytera'. The trace of the iconoclastic cross is above her head, like a shadow. The geometric centre of the apse coincides with the heart of both figures. Her throne displays a quadration of four legs (pillars of the universe), and her feet hover over the blue green line and swirling pattern, indicating fluidity. Photo by Author

FIG. 42 Below: Diagramme of heart and eyes lines of Theotokos mosaic due to the apse curvature and its own centre. Annotations by Author, on Section by Theoharidou (1994).



The four archangels' position is like the 'cubical masonry piers, equally four in number' (Constantine of Rhodes, 2012, p. 57, l. 563) that stake out the central space of the naos. It becomes the 'quadrangular earth,' the earthly *chora* in a cosmic geometry (see Fig. 40).[131] Here we can literally see Cosmas Indikopleustes' cosmological cuboid form surmounted by a dome/vault being delineated in iconography as a sacred landscape, and in architecture as sacred space. The landscape in the *analipsis* mosiac has a sequence of vertical and radiating layers, as we see in Cosmas, from the hidden source of creation, through the levels of light in the mandorla, to the rainbow on which Christ is seated, the blue of the skies and the gold of the heavens with angelic presences, to the mountains and trees of the natural world, the earth which humans inhabit, to the ocean at the very base that flows beneath and around the cosmos (compare Figs. 19 & 20). In Hagia Sophia's mosaic, the boulders at the base of the icon are so abstract that they seem to represent the fluidity of matter and sense-bound material perception as both the mountain and the billowing waves of the deep. This cosmic yet natural landscape is masterfully developed within the dome to connect horizontal movement, between perimeter and centre, with vertical movement, between apex and foundation, making them one three dimensional image.

4.5.2 The Theotokos Mosaic

Christ and the Holy Mother, one must remember, are the two *acheiropoeiton* images legitimized in the council of 843 AD. Here they have become the guiding 'hierarchs' who take the central, unmoving position among the rotating stars of the heavens.[132] All the celestial hierarchies and the divine names could be found through meditation on their person.[133]

The mosaic of the *Theotokos* in Hagia Sophia's apse could be seen along the same lines as embodying a geometry if we closely associate the image and the architecture.[134] As in the dome mosaic, the artist is expertly fusing the vertical

131. Four anchangels are regularly depicted on the four pendentives of Byzantine churches, as for example in Hagia Sophia in Constantinople.

132. It would be unfair to the Christian theology that underlies this geometry to find in it an 'unmoved mover'. Even among ancient astronomers, there were some who analysed the movements of constellations and deduced that the sun (which was known to the ancient world as a moving body), rather than the earth held the centre. The central, unmoving position thereby becomes a function of our perception from planet earth; the earth which the astronomers had calculated to have slight 'wobble' on its axis that created the 'precession of the equinoxes' seen from our point of view. If anything is considered to be 'stable', as Lossky describes, it is the Trinity, presented here as the person of Christ, to whom all the heavenly bodies bow.

133. Since the 'acheiropoieton' images are also subjective, and the point of transcendence is always hidden, Christian theology could still function in harmony with this kind of astronomy.

134. Buchwald (1999, p. 311, Fig. 26) illustrates this principle. He writes of the restriction that iconic figures *'must be represented in frontal attitude'*, and that, *'the problem could be effectively resolved by letting the figures confront each other not, as in Western art, within an imaginary*



FIG. 43 Above Left: Study of Theotokos mosaic selecting her perimeter, halo, heart centre, and superimposing the mandorla of the centre of the dome mosaic. Christ has one hand raised in blessing and the other holding the scroll of the scriptures, the same pose as the analipsis mosaic and as the theophany (Christ in Glory) in Latomou Monastery. The perimeter of her robe completely circumscribes all these as the "chora tou achorytou" (the space of that for which space cannot be made)

Sketch/Photo by Author

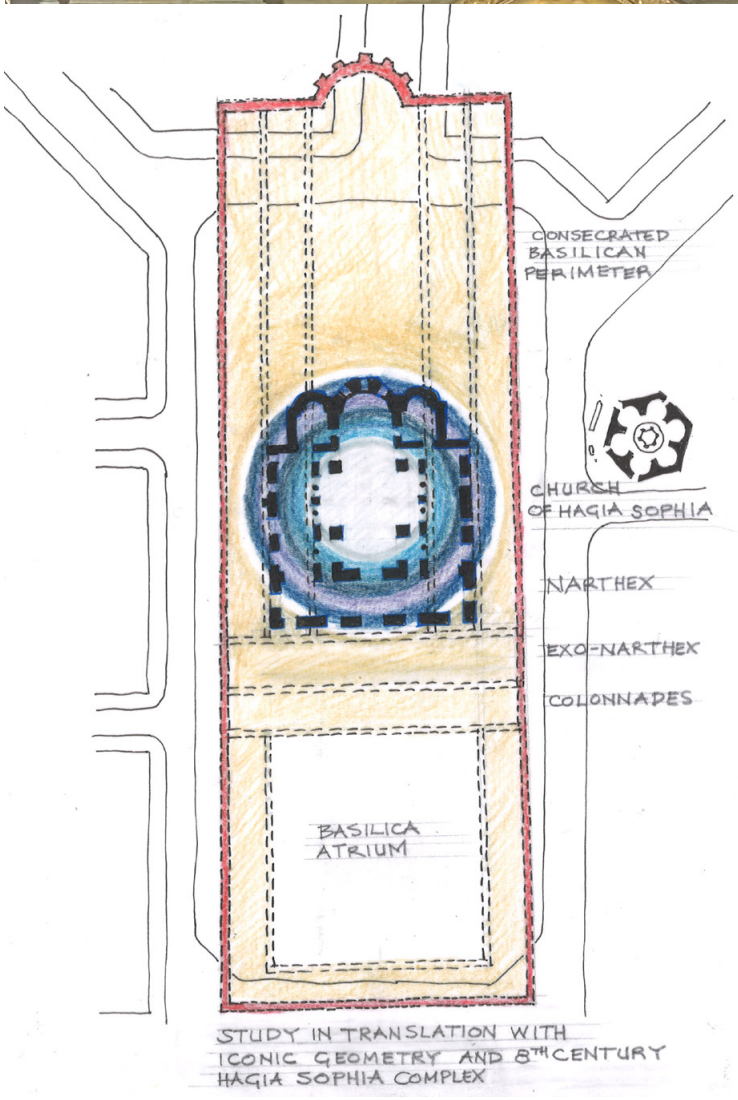


FIG. 44 Below Left: Study of the consecrated Basilican perimeter and Cross-Domed church within, superimposing the radiating mandorla of the dome mosaic on the plan of the present church. Compare the masons' job of marking a perimeter within infinite space by building up the walls around the 'naos'.

Drawing by Author.

visual geometry of the image with the quarter sphere three dimensional geometry of the apse. The Divine Ray could be considered to arrive from beyond the topmost point of the golden apse and traverse down the figure. At the same time it could be seen as connecting a central point hidden behind her figure, within the golden heavens, and traversing through the geometric centre of the apse. This line seems to coincide with the heart of both figures (see Figs. 41-43). As a heavenly hierarch, she has become the embodiment of the Divine Ray, that overflowing of divine munificence, offering the Christ child created through her, an aspect of her title 'Mother of God' or 'God bearer'.[135] Her throne has become the 'four pillars, or corners, of what was called the quadrangular earth', and her feet are floating above the green-blue lines that denote the waters of the abyss (see Figs. 41, 43).[136]

Here the Divine Ray is embodied in the combined figure of the *Theotokos* and Christ, through the grace that emanates from them which "shines more brighly than the sun".[137] This is not only communicated by the golden radiance of the mosaic but, as described by Ouspensky (1992, p. 174),

> The icon conveys this phenomena of light by a halo, which is a precise sign, in an image, of a well - defined event in the spiritual world. The light which shines from the glorified faces of the Saints and which surrounds their heads, as well as the other part of their bodies, naturally has a spherical shape.… The Halo is not an allegory, but the symbolical expression of an authentic and concrete reality.

As if to confirm that the Divine Ray could be delinated physically by the relationship between the figures, the architecture, and the viewer, Ouspensky adds,

> ... the entire human being flows like molten lava in a single burst towards God. The entire human nature is spiritually exalted; and then, according to Saint Dionysios the Areopagite, "the disorderly is set in order, the formless takes on form, and a man is radiant with a life full of light."' (ibid. p. 176)[138]

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pictorial space, but rather, across the real space of the building, by properly relating the images on curved or opposing surfaces.' The opposing images of Christ and the Theotokos across the space of the chora are shown In this Chapter in Fig. 9. Here, the focus is on the geometry of the apse and the *naos*, in their relationship with the synaxis.

135. The image of overflowing divine munificence (translated as 'dispensation') present in Hagia Sophia in Edessa is related by the Sougitha, verse 3; *'Verily, they have represented in it the mysteries of Thy Essence and Thy Dispensation, And he who surveys it minutely is filled with admiration at its sight.'*

136. My turn of phrase, 'waters of the abyss', refers to the lowest levels of icons respectively noted in FIG 2 (as 'absolute non-being'), FIG 3 (as 'the kingdom of darkness'), and FIG 4 (as 'Oceanos').

137. Ouspensky (2002, p. 174) is quoting from the Stichera for August 16 describing Christ.

138. Dionysios, EH Caput II, III:VIII

This delineation is an example of the 'unlike image' of Dionysios, which nevertheless can also lead to the divine reality. According to Temple (p. 150),

> It should be remembered that in true icon painting light, regardless of its extraordinary physical properties, is, for the painter, no more than the analogy for quite another substance that Dionysius calls divine light and which other theologians, such as Saint Gregory Palamas, call uncreated light. To the Hesychast this other substance, which we cannot know by the senses, is a concrete reality that can be experienced as an inner energy. It functions, for the practitioner of secret warfare, according to known and calculable laws.

To translate further analogies with the the church's architecture, I have sought the known qualities, associated with the holy figures, that were delinated in the image and could be found as an 'unlike image' in the building. The foremost of these qualities of the *Theotokos* is that of protection, mentioned in the last chapter on liturgy. As mentioned earlier, she conveys the spirit of the *Theotokos* as *Nikopoeia* and *Akatamachetos* (invincible)

> 'Whether this was understood as a battle against mortal enemies or against the ineffable powers of evil, the Mother of God was percieved to act like a general, dispatching her trusted soldiers to the field.' (Pentcheva, 2006, p. 94)

In both Constantinople and Thessaloniki, we know that relics of the Holy Mother, and later on the *Hodegetria* icon, were processed around the walls of the city under siege. She was associated with protecting walls of the city, thus the way her image is delineated may provide analogies with the walls of the church. The perimeter of her figure and robe completely encircles the figure of Christ much as the central core of the *naos* with its four piers, arches, and dome are encircled and held by the perimeter walls.[139] Her torso of shoulders and hips make a square geometry within which Christ is geometrically nested, and his figure is also composed with this square of shoulders and hips.[140] According to Pentcheva, the role of the *Theotokos* as the commander of military saints, was well developed by the 10th century when Constantine of Rhodes chose his metaphors.[141] The four central piers of the church of the Holy Apostles which 'raise up the soaring vaults that bear the dome-constructed roof ... stood there

139. Of the robes of holy figures, Ouspensky (2002, p. 185) writes, *'The clothing, while keeping its distinctiveness and covering the body in a perfectly logical fashion, is represented in such a way so as not to conceal the glorified state of the saint. It emphasises the work of man and becomes in some way the image of his vestment of glory, of his "robe of incorruptibility."'*

140. It could be argued that the human body itself is composed in this way, but the posture in this icon accentuates the square, despite the concealing folds of cloth; in other images of the Holy Mother and of Christ standing, this geometry is either elongated or most usually concealed by the folds of cloth.

141. According to James (2012, p. 61), *'The masonry was "well-made" (line 594) and the church stood in "secure formation," like generals of giants (lines 614-620) entwining their fingers.'*

in very secure formation like generals and commanders of *tagmata*' (In: James, 2012, p. 61).

Later in his ekphrasis, Constantine again finds metaphors to combine the architecture of the church with the symbolism of iconography. The golden halos of Christ, the *Theotokos* and the apostles amid the gold mosaic of the dome recapitulate by analogy that, 'the central dome should be the pre-eminent lord of all,' and of the other domes that, 'heaven furnished them from burning circles of worked bronze, and that falling from there they fitted onto the shoulders of the vaults of the towering piers'. Analogies such as these and others that we find in the ekphraseis to the Hagia Sophias were considered to be an important part of the reality of the church buildings. Iconographer Ouspenky (1992, p.181) writes about the icon from his lifelong experience that, 'the icon is both a means and a path to follow. It is itself a prayer… It teaches us "to fast with our eyes," in the words of Saint Dorotheus.' We must say the same thing about the masonry architecture of the churches.

4.6 How this relates to the masons' anagogy: a preview

The masons' anagogic path, which was summarised in comparison with the liturgy, also builds Hagia Sophia's mnemonic topology from the foundations up to the summit of the dome. The church's masonry architecture then becomes a holistic 'icon', experienced with all the senses, for those who come to pray in the *chora* of the church. The architectural *typos* of Hagia Sophia which the masons build upwards then becomes a mnemonic for the same theological contemplation as iconography, which notates God's creation of the universe emanating from top to bottom. The *chora* of the church is generated from one central point which then becomes a vertical hierarchy, on which the community can travel between the human point of view and God's point of view, and 'acquire the holy spirit' to use St. Seraphim of Sarov's expression.[142]

In these aspects the structure of icons, their hierarchy and their method of operation can be directly compared with the vertical levels of the masonry. If theology and philosophy give the icon a spatial hierarchy, and astronomy and cosmology translate into their seemingly natural topography, it is from this background that the figurative scenes emerge. One can propose this not only in the icon but with living figures in the building, as an exercise in Isar's *chorography* or Lidov's '*hierotopic* project'.[143] In the next Chapter 5 these will be presented

142. See St. Seraphim of Sarov (2010, pp. 22-24)

143. Lidov (2011, p. 41) writes, *'The most characteristic aspect of these hierotopic phenomena is their 'performativity,' since they were originally presented in dynamic and permanently changing forms.'* and in 'The Creator of Sacred Space as a Phenomenon of Byzantine Culture' he

as *mystagogic* similarly to the ritual of the liturgy, with a theoretical look at how these levels might correspond to the construction phases and design features with which the mason engages in his journey up the building. This proposed version of the masons' path of experience is based on analogies with the methods used to construct Hagia Sophia. The following is a summary where both the icon and the masonry architecture can be read from top to bottom or from bottom to top.

In icons, a hidden place is assigned to God; in a geometric centre that is somewhere off-canvas, or hidden behind a holy figure at the centre of concentric rings of light. For the masons, divine intention which precedes the marking of the centre (*omphalos*) can be considered to come from God's hidden place. For the masonry building of Hagia Sophia, the place is located beyond the topmost point of the dome, or at the heart of the dome, at its intangible centre which generates the dome form along with its capacity for reverberation, transfer of heat and movement of air.

In icons, the Divine Ray manifests (an overflowing of munificence) from this hidden place and descends in levels, starting with the realm of golden angelic light at the top above the earth's atmosphere and descending to become visible as the rainbow or a mandorla. As the light slows down it become denser. It crystallises as the earthly realm of the mountain which the Divine Ray splits open to reveal a cave. Or it divides into the two sides of a city creating a plaza-like urban space. Both cave and urban space are the *chora*. It illuminates the scene played out by persons in the *chora*. It forms the earth and its inhabitants distilling into the lowest watery region, where it terminates. Here the water is sometimes populated by fishes, the roots of plants, or a dragon. If an icon appears to show only the figurative person, like an icon of Christ or of the Holy Mother, their person conducts the Divine Ray which embodies this hierarchy of light crystallisation and distillation. One must remember those maps of the stars overlaid by sketchy figures. The symbolic figures drawn by the painter more easily enter the imagination, where the analogous spatial figures of philosophy, theology, astronomy, cosmology, the landcape, divine names and the alphabet, form an 'unlike image'. They merge with archetypes in the subjective inner topology of the contemplator, to which he or she arrives by the method of abstraction described by Dionysios' Mystagogia. One must remember the purpose of the contemplator's journey is the centre of creation, which Maximos gave temporarily to Christ before returning the place to God.

The Divine Ray that crystallizes the hierarchy in icons, also crystallizes the

writes, *'In a sense, the creator of sacred space is the artist, whose role seems comparable with the contemporary activity of film directors leading various artisans.'* (ibid. 2007, p. 135)

hierarchy of the construction of the church at defined levels. The church Hagia Sophia may look like the masonry structure of walls, doors, window, arches, vaults, and domes, but these too are composed into a map of theology, astronomy, cosmology, landscape, divine names and alphabets. They too are a mystagogic path as an 'unlike image' of Christ, a physical representation of community as a divine human. Hagia Sophia's architecture provides an 'unlike image' of the divine human (Christ) as a mnemonic, like a rosary, for the human being who lives its combined theoria and mystagogia to move towards *henosis*.

The hierarchy of the masonry church as it mirrors the hierarchy in icons closely follows the symbolism of the 6th century *ekphraseis* of the cathedrals of Hagia Sophia, Constantinople and Edessa (Urha). In particular, the Sougitha of Urha's concise, acrostic of 22 verses in Aramaic, corresponds stage by stage to the 22 letters of the Aramaic alphabet and describes the *ekklisia* as a temple (*naos*) from the summit of the dome down to the ground, fitting perfectly with the landscape of iconography, and presenting the 'unlike image' of Christ, the 'divine human' as the *ekklisia* of the Christian community.[144]

McVey[145] believes that the Sougitha 'as an architectural θεωρία [theoria], resembles the mystagogical commentaries on the liturgy' which are understood to be a means of ascent to God,

> [the] 'difference between the architectural θεωρία of the hymn and the liturgical θεωρία of the commentaries is that the hymn contemplates an object-the church building-while the commentaries contemplate an action-the public worship.' (McVey, 1983, p. 110)

On this basis of translation, then, one can posit a possible masons' mystagogy that draw the parallels with the liturgical commentaries of Maximos' Mystagogia and Dionysios' Ecclesiastical Hierarchy.

In summary, the potential energy within a single point, descends as the Di-

144. If we follow this logic as a conclusion to this research, we might well find that these levels correspond to human chakras and the levels of emanation that are found in the Kabala diagramme of the Jews. However, this would require further research, building upon the work I have already done in this thesis.

145. *'The Hymn as an architectural θεωρία [theoria], resembles the mystagogical commentaries on the liturgy in one respect but differs in another. Like the liturgical commentaries, the hymn derives from the tradition of θεωρία as it had developed throughout the Patristic period, especially since Origen, as a manner of biblical interpretation. Both the hymn and the commentaries take this tradition of contemplation from its Scriptural context and apply it to an object or action. The object or action is then understood to be a means of ascent to God. The fundamental difference between the architectural θεωρία of the hymn and the liturgical θεωρία of the commentaries is that the hymn contemplates an object-the church building-while the commentaries contemplate an action-the public worship of the Christian community. The two remain closely related since the place of the action (the building) and the instruments of the action (clergy, vestments, altar, ambo, vessels) are closely related to the actions themselves.'* (McVey, 1983, p. 110)



FIG. 45 Left: Annunciation, late 12 C St. Catherine's Monastery, Sinai, showing the waters above and the waters below the earth with fishes. There is a gold vertical ray descending to Mary. A chora is opened between the massing of the buildings. The horizon is low down, indicating that the two figures are meeting in the celestial realm, above the level of the cornice on the iconostasis. Available from: https://i.pinimg.com/originals/c1/f3/32/c1f3325153e230fbd068244ccefe1e3e.jpg [Accessed: 8 September, 2020]

FIG. 46 Below: The Divine Ray is illustrated by real sunlight entering the cave-like interior of Hagia Sophia. The gaze of the God-bearer (Theotokos) and the incarnate God (Christ) greet those who enter this chora, also illustrating their message. Photo by author.



"...caves are connected to the notions of unbuilt, indestructible, eternal. ... Caves become for the hermits a kind of physical-spiritual 'womb' in which they live, seeking rebirth and psychosomatic transformation through ascesis.'(Kakalis, 2020, p. 13)



FIG. 47 Left: St. John the Evangelist and Prochoros, Cretan 16C, Greek. The cave is the place of learning and transformation.

Available from: http://www.avrvm.it/wp-content/uploads/sites/3/2016/05/RID-San-Giovanni-Evangelista-e-Prohoros.jpg [Accessed: 8 September, 2020]

vine Ray's compassionate distribution through the golden dome 'stretched like the heavens - without columns, vaulted and closed'.[146] Procopius concurs in his *ekphrasis* for Hagia Sophia, Constantinople,

> It seems not to be founded on solid masonry but to be suspended from heaven by that golden chain and so cover the space. All of these elements, marvellously fitted together in mid-air ... (Procopius De Aedif. I, i, ll. 46-47, In: Mango 1972, p. 75)

The dome connects to the four 'broad' arches by pendentives that hang like 'craggy outcrops of rock' over the *chora*. The masons too experience a feeling of being suspended as they inch their bricks out over space to build the pendentives and the dome, as will be shown in the next chapter.[147]

The four 'broad' arches are 'of measureless size like the many-coloured, rounded bow of Iris'.[148] They slow down the divine light like rainbows bringing the golden hemisphere of the dome down to the quadrated earthly realm of the *naos*. We can equate this with the icons where the gold colour of the weightless angelic level descends and manifests as the rainbow and mandorlas. The mason apprentice is first introduced to a tangible unity within his earthly materials when he constructs his first arch.

'One light' is admitted through 12 arched windows, just as the 12 apostles around the base of the dome transmit divine light to the *ekklisia* as a people. Though the Trinity is impossible to conceptualise, the 'One light' enters through three windows below the apse in the east, illustrating its unity to be witnessed without thought.[149] It crystallises into the earthly material of the mountain with which the masons have constructed the mass of the building. The Sougitha describes the entire Hagia Sophia in Edessa as a mnemonic for the 'unlike image of Christ' who was, like Adam, created from Earth, just as the building is created from earth.

> Its marble is like the image not made by human hand, and its walls are harmoniously covered therewith. All polished and white, (this marble) is so shining that it gathers light within itself like the sun. (Sougitha v. 9, In: Mango 1972, pp. 57-60)

In Hagia Sophia, the polished marble revetments of the interior walls must have

146. See Mango's translation of the Sougitha in the appendix of this thesis for multiple references in this section.

147. See Chapter 5: 5.7.8, p.370 ff., and 5.7.9 p.379 ff.

148. Paul the Silentiary (In: Mango 1986, 448 ff., p. 82)

149. 'Furthermore, a single light shines in the choir through three open windows, Announcing the mystery of the Trinity, Father, Son and Holy Ghost.' (Sougitha, v.13, see Appendix). This illustrates perfectly the purpose of communicating in images when words are inadequate, and the mind cannot grasp, but simply witnesses.



FIG. 50 Background: The marble floor of Hagia Sophia, Constantinople, cut to reveal oceanic flowing patterns.

FIG. 51 Foreground: The marble floor of Hagia Sophia, Thessaloniki today, highlighting the ground floor. The spirit of depicting flowing waters was not lost in the restoration works, though it is more subdued. Photos by author

shone. One is mindful that the cathedral in Edessa (Urha) was renowned as a centre of pilgimage containing the *acheiropoeiton* image of Christ. In this hymn, the walls themselves are shining like the face of Christ on Mount Tabor.

All the 6th century eulogies celebrate the different types of marble (the earthly-*hyle*) as offerings from different parts of the inhabited world (*oikoumene)*. Paul the Silentiary has filled his *ekphrasis* of the building with metaphors of the human body from head to feet, including curved embracing bosoms and veiling robes. He made much of the marble that came from the different earths of the empire, from its peoples.

> ... the marble meadows gathered upon the mighty walls and spreading pavement of the lofty church [...] the speckled Phrygian stone, sometimes rosy mixed with white, sometimes gleaming with purple and silver flowers. There is a wealth of porphyry stone, too, besprinkled with little bright stars that had laden the river-boat on the broad Hile. You may see the bright green stone of Laconia and the glittering marble with waxy veins found in the deep gullies of the Iasian peaks, exhibiting slanting streaks of blood-red and livid white; the pale yellow with swirling red from the Lydian headland; the glittering crocus-like stone which the Lybian sun, warming it with its golden light… (Silentiary, v. 617, In: Mango 1972, p. 85)

Choricius, too, writes of St. Sergius of Gaza, 'Let someone enumerate to me the cities that pride themselves on the sumptuousness of the marble [*hyle*] they bring forth [… Proconnesus, Lacedaemonian, Carystus, Caria, Thessaly...] these places have contributed to the church.'[150] This is not simply a politically astute way of bringing tribute to a cathedral and cementing the ties among peoples of a diverse empire. To the eulogists, the universe is reflected in the interior landscapes of the different types of polished marble. And for Procopius the light in the stone is more precious than gold,

> "The whole ceiling is overlaid with gold, which adds glory to the beauty, yet the light reflected from the stones prevails, shining out in rivalry with the gold." (Procopius 1954, 1:i 53-57, p. 25)

The marble not only represents the landscape from whence it came, but also represents the collective body of the people. The building structure which, as it were, slows the speed of light via the concept of the rainbow was reflecting that light within the marble, filtering it through the unitary medium of earthly matter. There is a sense of celebration here that human is created out of earth, that God became circumscribed in earth as Christ.

The Divine Ray then wraps itself around the *chora* of human drama and activities at the ground floor, like a cave. The descending ray moulds this cave-

150. Choricius, Laudatio Marciani I, 41 (In: Mango 1986, p. 63)

like vessel for the blessing of the holy spirit to descend in that breezy central place that takes one's breath away, as the *ekphraseis* describe.[151] All this is 'sustained by the prayers of the Holy Mother' whose circumscribes within her walls the *chora tou achorytou* (the space of that for which a space cannot be made).[152] It even becomes the depths of the earth and the subterranean aquifers beneath Hagia Sophia representing the ocean of energetic frequency.

Thus the masonry architecture provides a mnemonic topology like the icons in which each stage mirrors the one above with similarity and difference. The downward path overlaps with the masons' anagogy as stages starting from the sensory world, since to Dionysios even sense-perceptions are an 'echo of Wisdom'.[153] With five senses a person enters this church, 'Five doors open into [the church] like the five virgins, And the faithful enter by them, gloriously like the virgins to the bridal couch of light' (Sougitha In: McVey, 1983, p. 92). From the realm of the sensory world to the realm of the *nous* within which are the divine names, angelic emanations and archetypes, to the One 'beyond all' is a system that works simultaneously in ascent and descent, like the ladder.[154]

The Master mason is aware of their simultaneity as part of his work. Potential energy is the reality of a stone with a height. When it starts to descend, it becomes kinetic energy and the entire work of the masons is to attend that potential energy as it becomes kinetic and begins to travel. They must bring the weight of stones and bricks safely down to the earth beneath their feet. So while the masons are building upwards and undergoing the stages of their anagogy, the Master Mason must be constantly aware of bringing the potential energy of the topmost stones and bricks, through all the kinetic energy of moving and placing the heavy building material, down to earth safely. Uždavinys (2009, p. 27) suggests this practice would be completely in accord with Plotinus,

> The One is the supreme *arche* of all and cannot be deprived of its *energeia* because all multiplicity flows from the superabundance of the One and must be referred back to the One.

The masons' training is to clear the noise of their distracting thoughts and learn to be aware of this energy at every moment, so although it is descending downwards to earth and the mason is building upwards, he must constantly refer the energy to its source. This is the masons' experience of the Divine Ray of energy which leads them simply to where they already stand at the centre.

151. See Chapter 3 (p. 186) of this thesis pertaining to Paul the Silentiary's *ekphrasis:* 'Whither am I driven? What wind upon the sea, has carried away my roaming speech? The centre of the church, the most renowned place, has been neglected." (Mango 1972, 425, p.82)

152. See Chapter 3 of this thesis (p. 163)

153. Dionysios (1897, DN VII: II, p.60)

154. Ibid. (MT I: III, p. 90)

Though the masons' journey is literally anagogic during the building of the cathedral, the descent of the Holy Spirit is its purpose and its fruit, and the focus of the mason is on the centre which guides and defines his work building upwards and the potential energy moving downwards.

5.0 MASONRY ANALOGIES AND METHODS IN THE CONSTRUCTION OF HAGIA SOPHIA, THESSALONIKI

5.0 Tangible architecture and analogy

Architecture offers a unique position to the person who stands in its space; they become the poetic interpreter. I believe this quality of architecture supported Christian theology between the 5th and 9th centuries, in which the cathedral of Hagia Sophia, the subject of my case study, played a significant part.

In the last chapter we saw how the art of icon painting employs visual analogies and artists' technique to give its message. Architecture employs immersive analogy, experienced by all the senses; it moulds our cognitive vocabulary yet today we usually disregard this and classify architecture as purely functional. A sense-based vocabulary is not childish imagination nor does it make us superstitious. In fact, it can train us in healthy discrimination. A seperation between the senses and the intellect cannot be sustained by load-bearing masonry architecture, because the forms of the arch and the domed cave occur without human intervention, through natural forces. These forms bring the potential energy of the topmost stone downwards to reach the earth safely with structural coherence. Today, we validate these natural forms through physics and engineering, but a theological culture like 8th century Thessaloniki would have attributed them to a divinely-distributed order and harmony, originating in God. This chapter seeks to enter the Byzantine mason's experienced methods while not conflicting with contemporary scientific analysis, letting the building itself mediate, unchanged by whichever epistemology is used to interpret it. The following mason's 'journey to completion' is inferred by comparison with the other disciplines explored in previous chapters. This is done in the spirit of opening a conversation, rather than offering a unique historical solution. Just as the liturgy does not seek validation by the architecture of the church but works in synergy with it, so the following proposal of a masons' initatory path is inferred from other disciplines, not seeking validation by the physics and engineering of the building, but requiring a synergy with it.

Masonry architecture's timeless principles give it a universal provenance obscuring its historical origin while manifesting it on every continent. My attitude to its provence is related to its capacity for analogy and theology, rather than conjecture about pre-history. As I have mentioned in my introduction, the evidence shows that it is an extremely ancient art of construction. The most ancient walled structures found to date are circular rooms of rough stone for ritual use from around 10,000 BC onwards.[1] Later, evidence of inhabited earthen

1. See pp. 28-31 of my Introdiction. The Göbekli Tepe site in SE Anatolia has revealed 20 circu-

masonry has been found in neolithic Mesopotamia and the Near East.

Some scholars suggest that the masonry dome is a formalistic copy in stone of an original shelter built with pliable materials, such as reeds, branches, and animal skins.[2] Yet to the mason who builds a dome with his hands it makes no sense to seperate the 'domical shape' and 'idea' from its materiality. The Byzantine liturgical body-soul perception, appropriate to a study of Hagia Sophia, does not seperate the world of ideas from the materiality of making. With such a separation the coherence of the mind with architecture's material poetics is lost. The mason cannot ignore the intimate 'oneiric' relationship between the material of earth, the mason, gravity, and the domed form because his job depends on it. Therefore, this chapter emphasizes analogies experienced subjectively.

The masonry architecture of the Byzantines, built as it was with the materials of the earth, the stone, bricks and lime, marble and precious stones, brings to human experience the poetics of Earth, from deep within its nature. Its forms spring from the material's load-bearing quality of strength in compression. If a mason were to ask his bricks, 'What do you want to be?' they will always reply, 'Make us into an arch'.[3] Based on the mason's own experiences of building arches, vaults, and domes, it follows that analogous structures form within him or her. The person becomes the product of the creative discipline. In masonry, such is the closeness of the material, sensory experience, to the inner archetype, that at some point the mason may find himself asking, 'Who speaks, the dreamer or the world?'[4] At the same time, there is the useful and functional product

lar 'rooms', with more than 200 megalithic pillars embedded in rough stone walls. Radiocarbon analysis dates them to about 9600 - 8800 BC (pre-pottery neolithic). The site is around 12 km NE of Urfa, or Urha, known to the Greco-Roman empires by its Seleucid name as the city of Edessa. Floors in the oldest layer are made of terrazzo (burnt lime, clay and small stones). These enclosures were filled, 'for reasons unknown', with more stones and clay during the neolithic era. Since there is no contradictory evidence, I suggest that these circular and oval spaces were partially or fully domed using stones and clay that later collapsed into the room. A 7th-4th millenium BC neolithic site at Khirokitia, Cyprus has 20 such round stone structures which have been theoretically reconstructed as domed tholoi of unbaked clay-bricks, with an internal timber mezzanine. Archaeologists suggest that these were houses but it is possible that they were ritual spaces that were periodically inhabited rather like a temple precinct.

2. Baldwin-Smith's view, in The Dome (1978, p. 6) is, 'The domical shape must be distinguished from domical vaulting because the dome, both as an idea and a method of roofing, originated in pliable materials upon a primitive shelter and was later preserved, venerated, and translated into more permanent materials, largely for symbolic and traditional reasons…. the dome, it must be realised, was first of all a shape and then an idea.'

3. Louis Khan is reputed to have asked this question to his bricks. Though I have not been able to find a substantial reference for this story, the question remains a profound one, whoever is asking.

4. The theorem, *'Tout l'etre du monde, s'il reve, reve qu'il parle'*, was proposed by the scientific philosopher Gaston Bachelard (1960) in 'The Poetics of Reverie' [*La Poetique de la Reverie]* (p. 161).

of a building. A non-mason can also share in the masons' experience by using the church building, like the hermit crab that re-inhabits the mollusc's shell, and his own life may also become formed by it, as we have seen through liturgy or iconography in previous chapters.

The masonry dome connects a person's immersive sensory experience, their vocabulary of analogies, with a manifest form. The cause as 'pliable materials' misses the point that masonry architecture's image (*eikon*) is 'of the same substance' (*homo-ousios)* as its earthly material. Therefore, to enter the subject of masonry topology and the masons' experienced *praxis* in this church of Hagia Sophia requires an understanding of the human imagination as it relates to tangible experience.

5.1 'Reality' and 'imagination'

In popular culture today we divide the 'imagination' from what we call 'reality', calling them inner and outer. Modern humans struggle to relate sensory experience and imagination, and when they do not connect we easily fall into the belief that all knowledge is relative. The Byzantine world-view did not divide the inner imagination and the outer world as we now do. Byzantine theologians were constantly negotiating to keep them connected. Both Dionysios the (pseudo) Areopagite and Maximos the Confessor write about the coherent connection between the outer and inner, the seen and unseen world. There was a conviction that the world of images and dreams must be on a continuum with the outer world experienced with the senses.[5]

It is difficult for the modern reader to suddenly put themselves in a Byzantine frame of mind by simply studying historic texts such as Dionysios, Maximos, or the Philokalia. We do not appreciate how Byzantine ascetic practices could have aimed at healing this coherent connection, rather than making division. Nor do we understand how exemplary figures from Evagrius of Pontus to Gregory Palamas, and in particular the Hesychasts, located the heart as the unitary centre of perception.[6] The modern human needs modern examples and it is helpful initially to bring in the work of recent thinkers as mediators.

The late 20th century architect Nader Khalili wrote about his own journey

5. *'For the whole spiritual world seems mystically imprinted on the whole sensible world in symbolic forms, for those who are capable of seeing this ... And again, 'The invisible realities from the creation of the world have been percieved and are recognised through the things he has made, says the divine Apostle.'* (Maximos 1985, p. 189),

6. *'The solitary is he who declares: O God, my heart is ready. The solitary is he who says: (Ps I vi, 8) I sleep but my heart is awake (Song of songs v.2)'* (St. John Climacus, 1959, Step 27: 17, p. 238). Hagia Sophia was the seat of the archbishop St. Gregory Palamas of Thessaloniki in the 14th century.

towards a correspondance of the seen and the unseen, inner and outer, in his philosophical autobiography 'Sidewalks on the Moon',

> Reality and imagination. Imagination and reality. Isn't imagination a reality? Isn't reality merely a state of our imagination? Where are we, as humans, positioned in these two seperate zones? Have we ourselves divided such an indivisible state of being so that we can anchor our lives in a more manageable harbour? What is the day to day use of knowing what is real and what is imagined? And finally where is the position of God in such a divided unity? (Khalili 1995, p. 135)

His phrase 'a more manageable harbour' (reminiscent of Faustus' pact with Mephistophilis) suggests someone who seeks control over the outer world by suppressing the imagination. This would lead to dividing a unitary reality and ascribing an independent existence to the fruits of our personal imagination. It would amount to the kind of idolatry that the Christian fathers vigorously rejected in their writings and practices, in order to nurture a truly monotheistic way of life.

Regarding the interplay between the 'imaginary' (iconic) and the 'real' (built structure), James (2012, p. 1999) comments on how the Church of the Holy Apostles was percieved in *ekphrasis*,

> For Constantine [of Rhodes], the shapes of the building formed reflections of the eternal heavenly and transient earthly worlds. The square or cube on which the church was founded symbolised the earth and the four elements (as Constantine made clear to his audience in lines 444-445) while the circles or spheres with which it was roofed denoted the heavenly (line 505, a heaven furnished with its own stars; lines 631-632, heaven furnishing the domes).[7]

Perhaps the work of the great 20th century scientific philosopher Gaston Bachelard on poetics can best show the modern mind how to shift away from the habit of divided reality and extend into pre-supposing a unitary reality, as the Byzantine theologians did.

5.2 The Tangible Imagination

Bachelard's epistemology affirms a continuity between matter and imagination, and how the individual can approach a fusion of science and poetics. He writes,

> One is not a philosopher if one does not become more aware at one point or another, of the

7. In this the masons were constructing the image of creation into the church. In her footnote, James (2012, p. 1999) references, *'This is the sort of cosmology found in Kosmas Indikopleustes the flat earth with a barrel-vaulted heaven above resembling a domed house. … And H.Saradi, 'Space in Byzantine thought', in S.Curcic and E.Hadjitryphonos (eds), Architecture as icon (Princeton, 2010), 88–90.'.*

coherence and unity of the mind. (Bachelard 1940, PN, p.3) (In: Gaudin 1987, p. xix) [8]

To the modern mind science has a deductive and inductive method that objectifies matter. Then poetics takes inanimate matter and revives it within a person's imagination. Bachelard fundamentally challenges these definitions, with a science that 'subjectivises' matter. In *'The Poetics of Space'*, he complains that while philosophers engage in a dialectic of 'I' and 'non-I' they, and we, have lost sight of our own being. He helps us to relate the 'I' and 'non-I' through our childhood home, as our first contact with the cosmos 'in the universe of the house',

> ... whereas the real beginnings of images, if we study them phenomenologically, will give concrete evidence of the values of inhabited space, of the non-I that protects the I. (Bachelard 1994, PS, p. 5)

To him, the human being 'experiences the house in its reality and in its virtuality' (ibid. PS, p. 5). He develops a methodology through the daydream.

Let us imagine our daydreamer is walking around the cathedral of Hagia Sophia. They see and touch the stone walls, forming a mental picture of the interior. They feel the breeze coming through the window bringing hints via smells and sounds of what lies immediately outside. There is a seat in a corner with a lingering spot of sunshine. Our daydreamer sits down, puts their head back and rests. Another scene flashes up in their mind's eye, as if in another world within them. They shake themselves out of the reverie, to find they are still in the church. Our daydreamer's momentary connection between the sensory world and the imagination, may be a sudden thought about a person who soon arrives, or about events which happen at another time, or are happening elsewhere. If one habitually divides 'reality' and 'imagination', such connections would be dismissed as accidental, impossible, or 'paranormal', but if one sees imagination and reality as a continuum they become scientifically very normal.

Bachelard describes the scene of a daydreamer in a house,

> The sheltered being gives perceptible limits to his shelter. He experiences the house in its reality and in its virtuality, by means of thought and dreams. It is no longer in its positive aspect that the house is really 'lived', nor is it only in the passing hour that we recognize its benefits. [...] The house, like fire and water, will permit me, later in this work, to recall flashes of daydreams that illuminate the synthesis of immemorial and recollected. In this remote region, memory and imagination remain associated, each one working for their mutual

8. The reference is Bachelard, G. (1940) *La Philosophie du 'Non': Essai d'une philosophie du nouvel esprit scientifique*, Paris: Presses Universitaires de France, p.3. Translation is from Gaudin, C. ed. (1987) *Gaston Bachelard: On Poetic Imagination and Reverie*, Dallas: Spring Publications.

deepening. In the order of values, they both constitute a community of memory and image. (Bachelard 1994, PS, p. 5)

He urges us to connect the outer world and the inner scene by experiencing 'the house in its reality and in its virtuality'. In his 'letter to John', Dionysios the pseudo-Areopagite (1897, p. 117) also urges such a synthesis with profoundly simple words, 'Truly things seen are manifest images of things unseen.' and Maximos writes that 'This whole reality is science ...' (1985, MT:V, p.194)

As a philosopher of science, Bachelard presents this synthesis through the sensory qualities of earth, water, air and fire, illustrated by poetic imagery in great literary works.[9] He never loses sight of the person of the poet in reverie. His support of daydreams even extends to unrealistic ones that, like the early Christian fathers, he does not suppress. Instead, he orients them to the depth of matter. He describes 'images of matter' in the work of the great poets and prose writers,

Yet besides the images of form, so often evoked by psychologists of the imagination, there are - as I will show - images of matter, images that stem directly from matter. The eye assigns them names, but only the hand truly knows them. A dynamic joy touches, moulds, and refines them. When forms, mere perishable forms and vain images - perpetual changes of surfaces - are put aside, these images of matter are dreamt substantially and intimately. They have weight; they constitute a heart. (Bachelard 1983, ER, p.1)

He writes about the need to go beyond the seductive formal imagination, to penetrate it and 'think matter', to dream and live it. Like Dionysios (1897, CH I: III, p. 149) for whom the 'sacred mysteries' must 'lead us through the sensible to the intelligible', Bachelard reaches through matter to find the capacity of the *nous* (intuitive mind),

Meditated upon from the perspective of its depth, matter is the very principle that can dissociate itself from forms. […] meditation on matter cultivates an open imagination. (Bachelard, 1999, ER p.2)

With Bachelard's words, 'open imagination', we slip free from the 'manageable harbour' and let our vessel move into the ocean of reverie. According to Bachelard,

One can say that a disturbance of the function of unreality has repercussions on the function of reality. If the function of opening out, which is precisely the function of imagination, is badly performed, perception itself remains obtuse. We must find a regular connection from the real to the imaginary. (Bachelard, 2011, AS 14-15)

9. Bachelard was appointed the chair of History and Philosophy of the Sciences at the Sorbonne University in Paris, a post which was created for him in 1940.

It is this 'regular connection' that the mason is cultivating as he goes about his daily work. He ascends and descends his literal ladder at the same time that he ascends and descends the theological one, practicing the methods of construction that are shown to him by his mystagogue, the Master mason.

5.3 The *acheiropoeiton* and Bachelard's 'images of matter'.

In the disciplined work of the Byzantine mason who built a masonry church, his hands truly knew the 'images of matter' which arose as he moulded the earthen materials. To truly know the tangible images of arches, domes, and vaults including those that built Hagia Sophia Thessaloniki, the mason must relinquish his personal vision. He must listen to the stone's inner structure, and build according to what his materials are asking of him. Masonry too has its *acheiropoeiton* images 'made without hands' springing from the material imagination, and revealing the inner nature of the earth, stone, clay, fire, fused bricks, crystalline rocks, and burned lime mortar. The modern builder who is paid to fulfill the exact design specification of the architect, has been deprived of such meditative work. Bachelard warns us,

> Take away dreams and you stultify the worker. Leave out the oneiric forces of work and you diminish, you annihilate the artisan. (Bachelard 2011, TR 92-93)

> If poetry is to revive the forces of creation in the soul, if it is to help us to relive our natural dreams in all their intensity and all their functions, we must understand that the hand, as well as the eye, has its reveries and its poetry. (Ibid. TR 70-80)

The haptic-meditative work of the mason involves the earth and its hidden will. To succeed in building unsupported masonry domes, and vaults (without formwork) requires him to embrace Bachelard's 'oneirism of work', a concept that echoes Dionysios' *anenergesia* (doing without doing). The mason witnesses arches, domes, and vaults emerge under gravity's resolute attraction while he acts as midwife. His earthen material seems internally impressed with the unity of these forms.[10] Thus with Bachelard's help we could enter the Byzantine fusion of imagination and the tangible world.

Bachelard's aesthetic brings us close to the Christian monastic fathers from fifteen hundred years earlier. They neither limited the imagination of form nor the imagination of matter. They simply entrained both in the service of a unitary reality. I discussed the mystagogic process in the previous chapter in which

10. This poetics of earth has moulded masonry forms from the earliest millennia of its practice. If, for example, one were to pile up wet sand on the beach, or moistened earth in the field, most of it will fall to the ground. Whatever remains standing by itself will be in arch or domed shape, giving the message of earth's internal geometry.



FIG. 1 Above: Aerial view of Hagia Sophia within the modern city showing: the west entrance court, a tranquil public plaza the size of the forecourt of the early 5-aisle basilica; three apses to the east and the copper-covered dome in the centre. *Available from: https://www.google.com/maps/place/Cathedral+Church+of+Agia+Sophia+of+Thessalonica/ [Accessed: 29 August 2020]*

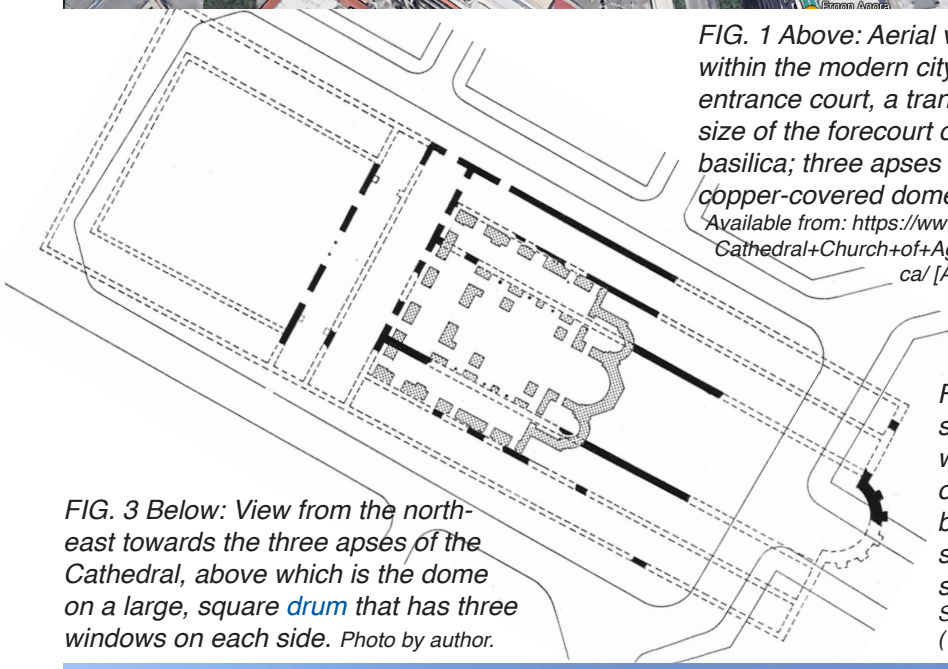


FIG. 2 Left: The present cathdral located within the foundation of the former 5-aisle basilica. Black lines show where the basilica walls are visible. *Source: Theocharidou, (1994, p. 35).*

FIG. 3 Below: View from the north-east towards the three apses of the Cathedral, above which is the dome on a large, square drum that has three windows on each side. *Photo by author.*



Dionysios and Plotinus before him struck an analogy of the sculptor who chips away to reveal the latent image within the stone. This was an analogy for cutting away the illusory personality to reveal the true human, which for the 8th century theologian was the divine Christ. Dionysios' method applied to the monastic and the mason, as well as to the icon painter and the participant in the eucharist liturgy. Each applied the process of cutting away the initiant's own shadow by degrees to allow the divine will to work through their person.[11] In the case of the mason's art his work literally revealed the 'latent image' within the stone as an analogy for his inner process. Dionysios advised that a person's sensory experience is actually the best means available to them for untangling their contradictory feelings, their rift in logic between the intellect and the experiences of their senses. His method, as we have seen, is through *apophatic* theology (setting aside 'the distinctions of worldly intelligence') and then returning to the same senses via the timeless archetypes of divine names (symbolic affirmations of God). By such a dual process of expansion and contraction he draws the initiate towards a unitary state of being.[12]

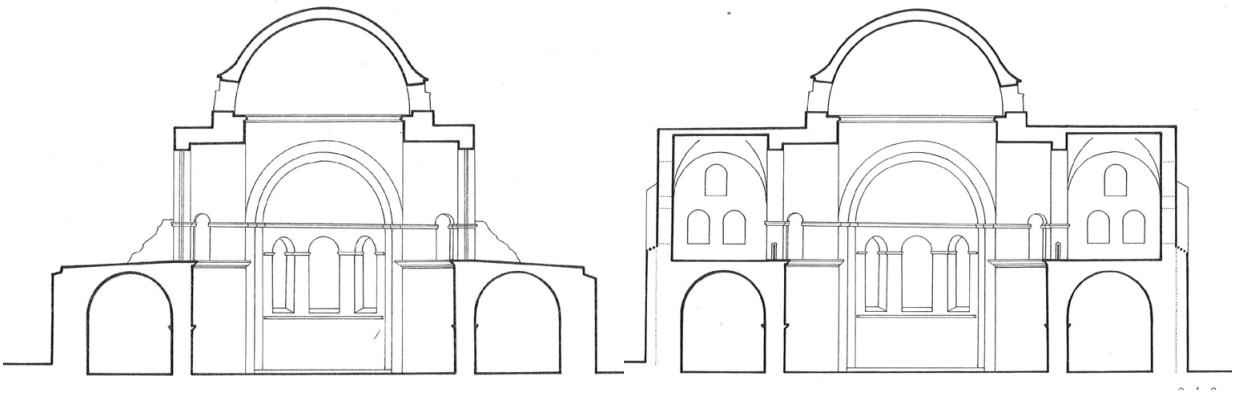
One can see this as part of an over-arching cultural philosophy which must have imbued the life of the individual and the group. The mason and the guild of which he was a part, and every level of organisation that was required to erect a building as significant as the cathedral of Hagia Sophia, Thessaloniki, was a part of the culture of his time. It was a culture immensely influenced by theology. In a Byzantine theocracy this would have interacted with trends and decisions of profit and loss, availability of materials, construction capability, and natural forms. Though we know that masons' guilds existed from the *Book of the Eparch*, the way that their working methods might have related to this theological culture can only be inferred, directly and indirectly.[13]

Although I am undertaking a methodology of translation as a way of matching meaning and experience between liturgy, iconography and architec-

11. Dionysios almost exactly paraphrases the well-known analogy of Plotinus that I have quoted in the previous Chapter 4, *'Withdraw into yourself and look; and if you do not find yourself beautiful as yet, do as the sculptor of a statue [...] cut away all that is excessive, straighten all that is crooked, bring to light to all that is shadowed [...] do not cease until there shall shine out on you the Godlike Splendour of Beauty; until you see temperance surely established in the stainless shrine.'* (Plotinus 1966, I:6:9 lines 7-16 p. 259)

12. '*now indeed, according to our capacity, through the sacred veils of the loving-kindness towards man, made known in the Oracles and hierarchical traditions, which envelop things intelligible in things sensible, and things superessential in things that are; and places froms and shapes around the formless and shapeless, and multiply and fashion the supernatural and formless simplicity in the variedness of the divided symbols;'* (Dionysios 1897, DN I:IV, p. 11)

13. The *Book of the Eparch*, set out the regulations governing certain guilds in Constantinople. It was compiled in the 10th century and administered by the city prefect (eparch). The regulations protected guild members from competition, regulated the quality and quantity of production, supervised prices and salaries, and controlled the activities of foreign traders.



FIGS. 4-7: Reconstruction of 1st construction phase according to Theocharidou (1994, p. 90)
FIG. 4 Above Left: Section through the first construction phase before the upper level galleries
FIG. 5 Above Right: Cross-section through the second phase, including the upper galleries and side aisles, and the central dome, showing the cornices at the vertical stages and the tripartite window in the east apse. *Source: Theocharidou, (1994, pp. 86, 91).*

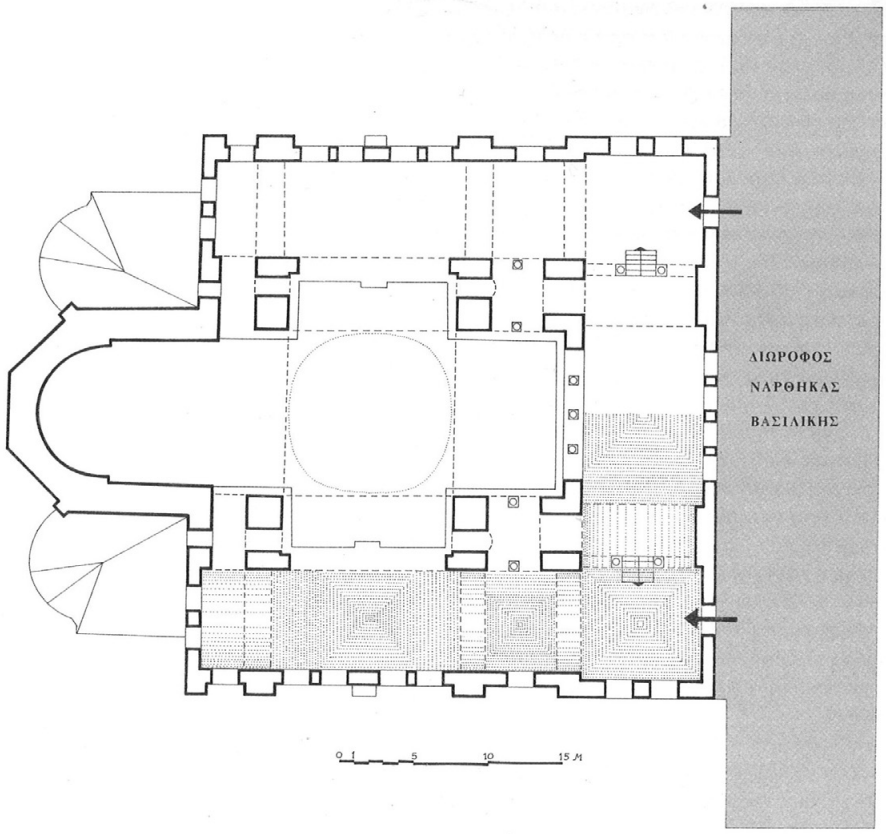


FIG. 6 Left Upper: Plan of Hagia Sophia showing the likely location of the outer narthex from the original basilica (greyed area), and the suggested layout of brick courses in the construction of the first phase upper storey vaulting (first phase).
Source: Theocharidou, (1994, p. 90).

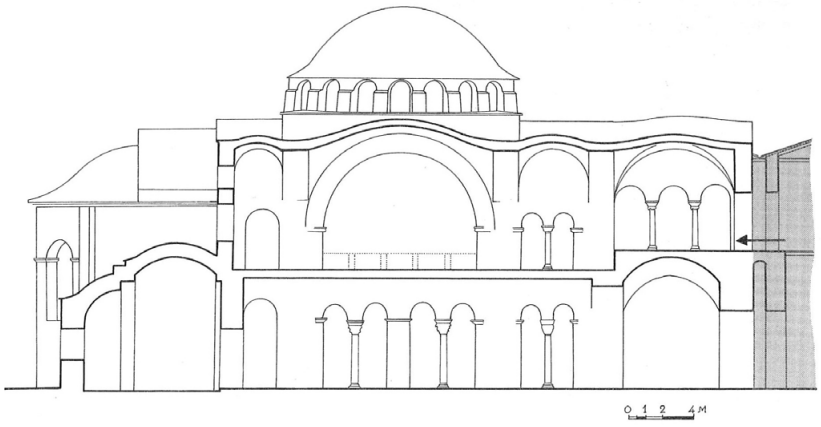


FIG. 7 Left Lower: Section through the north side aisle and upper level gallery, with elevation of the first dome and east apse, according to Theocharidou. One of the four 'great arch' supporting the pendentives under the dome is visible in the centre. Also shown are the original inner doors between the narthexes.
Source: Theocharidou, (1994, p. 92).

ture, it is with a full awareness that others are free to question my interpretations and undertake their own translation. It is only by beginning such an enterprise that a scholarly conversation can begin and that new knowledge could have the chance to emerge through the exchange of views. On the other hand if this door is not opened, there is no chance that such new knowledge could grow in this field of enquiry. The following research is equally derived from my examination of the building repeatedly and meditatively, as from studying the anagogy of liturgy and iconography made in the previous two chapters. My field observations about the mason's internal relationship with the methods and materials of his work were partly confirmed by interviewing stone masons in the traditional guilds in Epirus.[14] In this way I have attempted to re-trace the masons' steps while building Hagia Sophia.

5.4 The Cathedral church of Hagia Sophia

Before describing a proposed masons' upward journey (anagogy), I wish to present here a physical overview of the cathedral in its context (see Figs. 1, 3).

The church is 'generally considered to be a typical example of a transitional domed basilica with an ambulatory, otherwise known as a cross-domed basilica'.[15] The earliest church on the site, as mentioned in earlier chapters, was the large 5-aisled basilica of St. Mark. It is assumed by most scholars to have collapsed or been irrevocably damaged, possibly by earthquake activity in the 7th century.[16] After the damage to the basilican church, the new church of Hagia Sophia was built during the Byzantine 'transitional period' of the 6th - 9th century AD. Hagia Sophia's pattern of re-construction, integrating parts of an older basilica with a new cross-domed core, has been linked with the transitional churches of Asia Minor by Feist and Karydis.[17] The debate about when Hagia Sophia, Thessaloniki was constructed is still ongoing, but most scholars now put it sometime in the 8th century.[18]

The *naos* of the current church has a central crossing, with a main horizontal axis from west to east and a secondary one north to south, which is defined by four massive piers and four 'broad arches' (vaults). Above this central core of the church is a dome on pendentives making a vertical axis. The *naos* is flanked

14. See the Appendices for the translated interviews at the end of this thesis.

15. according to architect Kalliope Theocharidou (1988, p. 86)

16. Theocharidou (1994, p. 30) lists the evidence of earthquakes centered in and around Thessaloniki and suggests that it may have finally collapsed by 630 AD.

17. See Chapter 2.

18. Scholars such as Mango, Ousterhout, and Feist, give a date sometime in the 8th century and more specifically Cormack gives 783 -787 AD and Velenis 741-840 AD; the Eccesiastical authority gives 717-741 AD, and Theocharidou up to 690 AD.

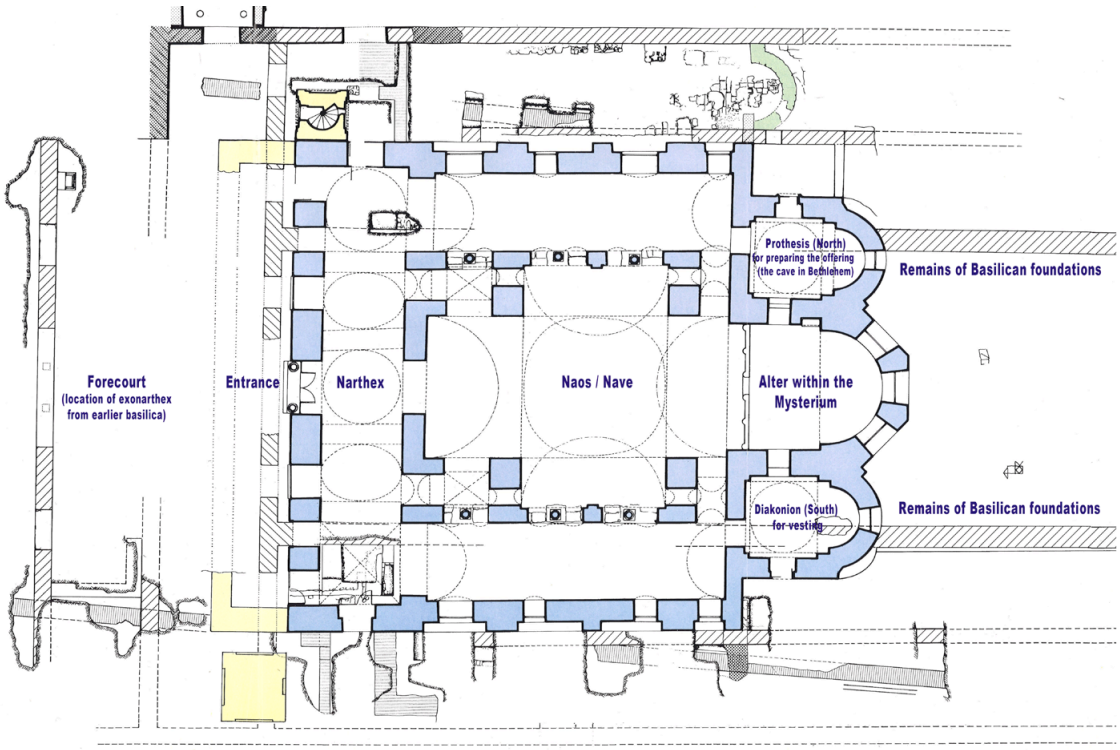


FIG. 8: Plan of Hagia Sophia amid the archaeological survey of the basilica and other former buildings. Theocharidou (1994, p. 90)

FIG 9: South wall of the church. There is a row of larger beam holes level with the top of the buttress piers projecting from the exterior wall. The limestone blocks and brick bands stop a little below this level. Considering that the church was built into a tightly knit medieval city, and that the perimeter walls of the basilica may have been standing at the time of construction, the limestone exterior would have been seen from up close, or even from a porrtico or colonnade. This would also be the case for the west wall which would have been within the exo-narthex.
Photo by author.



and buttressed by: a) vaulted aisles to the north and south, with upper galleries, b) the narthex in the west, with five domed entry bays, 3) three sanctuary apses in the east (see Figs. 8, 12, 26).[19] In her monograph, Theocharidou (1988) analyses its construction into four main phases of building, rebuilding, and additions, which she describes in detail with architectural survey drawings. The first two phases are most relevant to this thesis (see Figs. 4-7, 14). The third and fourth phases comprise a late re-modelling of the galleries, adding walls and timber roofing as well as parts of the access stair, which are not discussed.[20]

Other scholars have researched possible and probable dates of construction, how they might fit with known earthquake dates, and other aspects of the building's context.[21] The particulars of when the building was built and which part was built first are discussed here only when relevant to the masons' construction methods and a possible mystagogy, which is the focus of this chapter. In its first phase the church is thought to have been completed but suffered partial collapse of the central dome, three narthex domes and the cross-vault. Then in its second phase the damaged areas were rebuilt and extended vertically. The first phase is distingushed by alternating bands of white ashlar limestone and red bricks, common in Asia Minor and Constantinople but, in Thessaloniki, unique to this building. The second phase is built with the alternating bands of the local grey-green unworked stone and red bricks, ubiquitous in the other late Roman and Christian buildings in Thessaloniki. Remaining from the first phase is the tripartite sanctuary of the three apses, the load-bearing walls up to the spring line of the north and south aisle vaults as well as their long barrel vaulting, the narthex wall more or less up to springline and one narthex pendentive dome to the north-west, the four massive internal piers and bearing on them the four load-bearing bounding arches and short barrel vaults around the *naos*, along with the pendentives supporting the dome. What seems to have been built during the second phase, were three narthex domes and a cross-vault to the west, the internal tympana (screen walls) from 2.4 metres above the gallery level, and the central dome with its heavy square buttress cube. Much of the exterior walls of the galleries are also attributed to the second phase. Among the

19. *'There were originally seven external entrances to the narthex, one on the north and one on the south side, and five on the west facade.'* (Theocharidou, 1988, p. 20)

20. For details of chronology and construction see Theocharidou (1988, pp. 152-157), whose information draws from the archaeology of Kalligas immediately after the 1978 earthquake. The third and fourth phases include a bell tower and minarets, adjoining or connected buildings such as the archbishopric and the outer narthex (none standing today), and exterior walls and roofing over the upper galleries. Regarding the barrel-vaulted side aisles and tympana (screen walls), after giving arguments for and against, she concludes that the barrel vaults must be from the first phase.

21. My inconclusive research is included in the appendix.

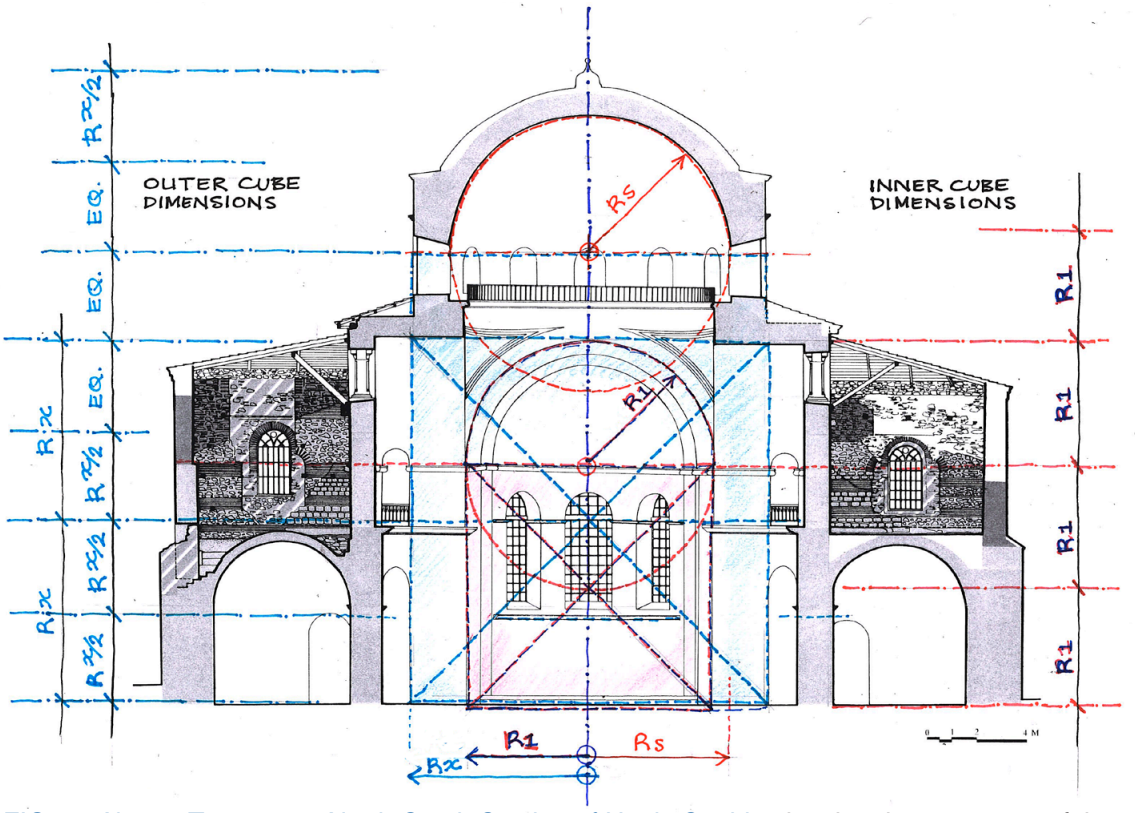


FIG. 10 Above: Transverse North-South Section of Hagia Sophia showing the core naos of the four broad arches, and the dome at the summit, with the peripheral buttressing of the north and south side vaults. The vertical layers with cornices are annotated related to the two systems of 3-dimensional cubic dimensions. If the dimension Rx is foundational, then R1 may have been derived per Constantine of Rhodes' "γωνίας κατ' ἐμβόλους" (In: James, 2012, p. 56, ll. 557-560) Source: Survey Section by Theocharidou (1994), annotations by author

FIG. 11 Below: Masons building the Tower of Babel, 11th C. mosaic by Byzantine craftsmen, Capella Palatina, Palazzo dei Normanni, Palermo. The tower has three vertical stages of construction with cornices (kosmites); to the left is probably a lime kiln (or symbol for the alchemy of the mason's journey); the senior masons working with their tools are on the upper levels - the one with the trowel is gesturing towards the clients and onlookers to the right; the element of fluidity is lowest in the image with the beardless young masons/apprentices slaking the lime or mixing mortar and putting it into the basket to be pulled up. Photo by author



many variables exist two more possibilities; 1) that Hagia Sophia did not suffer earthquake damage but might have had localised collapse for other reasons such as hasty construction or plastic mortar flow, or 2) that it might have been built in two distinct phases for financial or political reasons.[22]

5.5 The methods of the Master masons of Hagia Sophia.

In Chapter 4, I analyzed the geometry of the church's iconography, and described certain zones within Hagia Sophia, Thessaloniki that correspond to the hierarchy of the Divine Ray in icons. I explained how Dionysios and Maximos described *theoria* and *mystagogia* using simple geometrical figures which they confirmed via their own inner experience. Bearing these associations with masonry architecture in mind, I will now look at the journey of the mason himself. Over the course of building Hagia Sophia he experienced a hands-on a journey, using building methods that can be deduced from the physical building. These relevant construction techniques were part of the continuity of masonry's long and widespread use.[23] I have suggested how one might correlate these with liturgy in the conclusion of Chapter 3, and now attempt to do something similar while researching the construction processes in this chapter. In the context of building this case study church of Hagia Sophia, such a suggested masonry mystagogy should translate, or correlate, with the theological *theoria* and *mystagogia* that we have seen in liturgy and iconography.

By the time that Hagia Sophia was built, masonry arches, domes, and vaults had become part of the language of construction known by the *architekton*, Master builders, and masons.[24] Due to the Pax Romana, masons were able to travel long distances within the Roman empire during the 6-7th century, despite the shifting military border with the Sassanian (Persian) Empire.[25] Even earlier in the 1st-2nd century Lancaster (2015, p. 39) writes that vaults with a solid brick shell, 'especially in bath buildings of Greece and Asia Minor, were more com-

22. The fact that the four 'broad' arches are of slightly different heights (14.75–15.00 m) could indicate uneven settlement after construction.

23. Methods that are still employed today can help us understand the series of experiences which the masons may have undergone from foundations to completion.

24. According to Lancaster (2015, p. 42) *'Thus brick vaulting may have been more common than realised in Greece by the second half of the first century C.E. ... The introduction of brick vaulting in Asia Minor appears to have occured only in the second century CE.' See also Vitti (2016, p. 333) 'The use of brick vaults throughout the Peloponnese paved the way for brick to become the most reliable construction technique for vaulting in the centuries to come.'*

25. Regarding Byzantine architect-masons who travelled between Constantinople, Rome, Venice, Syria, Asia Minor, and the Dalmatian coast, Ousterhout (1999, p. 256) writes that, 'The probable existence of several workshops of masons active at the same time in Constantinople, as well as the temporary nature of the individual workshop, provide ample opportunity for cross-fertilization.' (Ibid. pp. 256-257)

mon than has been represented in earlier literature.' Writing of vaulted construction in Asia Minor's churches, Karydis (2012, p. 1) states that 'By the end of the 6th century ... the monumental architecture in this region was strongly influenced by the new architectural vocabulary.' Calling Asia Minor a 'bridge between Europe and Asia' Buchwald (1999, V: p. 199) suggests this led to a period of innovation in which the whole region became a 'dynamic centre of production.'[26] He notes that, 'most domed basilicas [of Asia Minor] can be reasonably attributed to the period before the Persian invasion of Asia Minor in the early 7th century, while most cross-domed basilicas were probably built after that invasion.' (ibid. p. 221)[27] All this cross-fertilization of construction knowledge informed the Master masons who constructed the cross-domed churches in Asia Minor and Thrace.

The relationship of the Master mason (*architekton)* and his new clients in the Transitional period is itself likely to have sparked innovation in the conservative field of construction. As discussed in Chapter 2, the *architekton*, or Master builder, was versed in a diversity of disciplines and knowledge, some of which was shared by his clients. This had a theoretical side, including astronomy, stereotomy, and physics (ἡ μηχανικὴ θεωρία), as well as a practical side, including the applied arts (*techne*) of metalwork, construction, carpentry, and the art of painting, according to Downey (1946-48, pp. 104-5).[28] Ousterhout (1999, p. 260) writes that by the end of the Transitional period, 'Architectural knowledge was transmitted from one generation to the next through a program of apprenticeship.' The status of the *architekton*, or Master mason, in the 8th century is not known, though it is evident from their buildings that they acquired a depth of

26. See Chapter 2 for more detail on the development of the conceptual design.

27. However, by the end of the 7th century the population was decimated from plague and wars. According to Mango (1998, p. 26) attempts at re-population were failures until, *'In the eighth century we repeatedly hear of the organised settlement of Syrians in Thrace'* who refers to Theophanes' Chronographia. Among the Christian refugees moved to Byzantine lands were the parents of Emperor Leo III 'the Isaurian', who was born in northen Syria after the Arab conquest. During the 8th century famine in Syria, his son Emperor Constantine V settled Christian refugees in Thrace and re-settled Thracian farmers in Anatolia as part of his re-organisation of the 'theme' system. According to historian John Julius Norwich (1988, p. 363), *'In 746 Constantine [V] invaded northern Syria [Asia] and captured Germanicia, the home of his ancestors; the larger part of the population he resettled in Thrace.'*

28. Downey (1946-48, pp. 99-118) tells us that the architects of Byzantine buildings might be referred to by 'different terms for builders of various kinds αρχιτέκτων [architekton], οἰκοδόμος [oikodomos], τεχνίτης [technites]', titles which referred to different disciplines within the education of the mechanikos. *'A man who had not completed the curriculum [for mechanikos] could ... be described as an αρχιτέκτων [architekton], a "master-builder"...'* (ibid. p. 109). In earlier centuries, these titles might be applied to persons of high status such as Trajan's chief architect-engineer, Apollodorus, who was called *architekton* in the records. The title mechanikos had fallen into disuse in the transitional period, with the most frequent title being architekton (architect or master-builder) or oikodomon (builder).

knowledge and even a high spiritual status within their own field.[29] 'With the decrease in building scale from the sixth century onward, there is a parallel shift of emphasis in the practical concerns of building, from structure to construction' (ibid. p. 233). This shift in emphasis has enormous implications about the role that construction practices played in the transmission of knowledge and even in the method of design.

A mason learned through direct experience under the guidance of a Master mason who, as the *architekton,* would have had a direct working relationship with his client. Already by the second half of the fourth century, a letter from Gregory of Nyssa suggests that Bishops were engaged in the conceptual design of their churches. He writes to the Bishop of Iconium asking for help with costing and building his conceptual design,

> '... by means of this thickeness of the walls and the intervening spaces, you may be able to reckon exactly the total number of feet. ... by means of a detailed enumeration to reckon the sum of all the elements and dispatch to us no fewer masons than the task demands.' (Gregory of Nyssa, Epist. XXV to Amphilochius, Bishop of Iconium, In: Mango, 1998, p.28)[30]

Iconium's Bishop presumably knew the *theoria* for projecting a geometric schematic of Gregory's concept, to provide him with architectural 'quantity surveying', a skill one would expect of the *architekton* as Master mason.

Up to a point it is necessary for any client to communicate his culture to his architect.[31] Relative to the principles of theoretical geometry, an Abbot of a monastery, for example, might communicate the building's religious symbolism. In a good working relationship, the *architekton* might have integrated a theological culture into his design-and-build process, and passed it to his masons in a form which they could understand through their working practices.[32]

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29. Monks and bishops had humble origins and they earned their education under a Master, a religious *Hierarch*. Many an Emperor's parents were villagers and they earned their education under an experienced General or member of the Imperial Court. Even the Empress Theodora learned how to be a sharp judge of human nature and how to handle a crowd through her early life experience. However, by the 14th century, compared with their clients, Ousterhout, (1999, p. 40) writes that, *'builders are of considerably lower stature. In Alexius Makrembolites's "Dialogue between the Rich and the Poor", written between 1342 and 1344, masons are included among the poor. Masons are rarely mentioned by name and when named, it is usually as an incidental detail in a text with another purpose.'*

30. Iconium was a part of greater region of Isauria, an area renowned for its Master masons, and Gregory is apparently asking for references to good ones.

31. That theology was a passionate interest, even of the man in the 6th century market place, arguing his position on the nature of Christ, is clear in Mango's (1998) history, Byzantium.

32. Regarding Geometry, Ingold (2013, p. 51) tells the story of Euclid as it was known in medieval times remarking that, ' Euclid had virtually become the eponymous hero of a craft and the word geometry had become synonymous with masonry.… It was, in the first place, an essentially practical pursuit, rather than a matter of theory.'

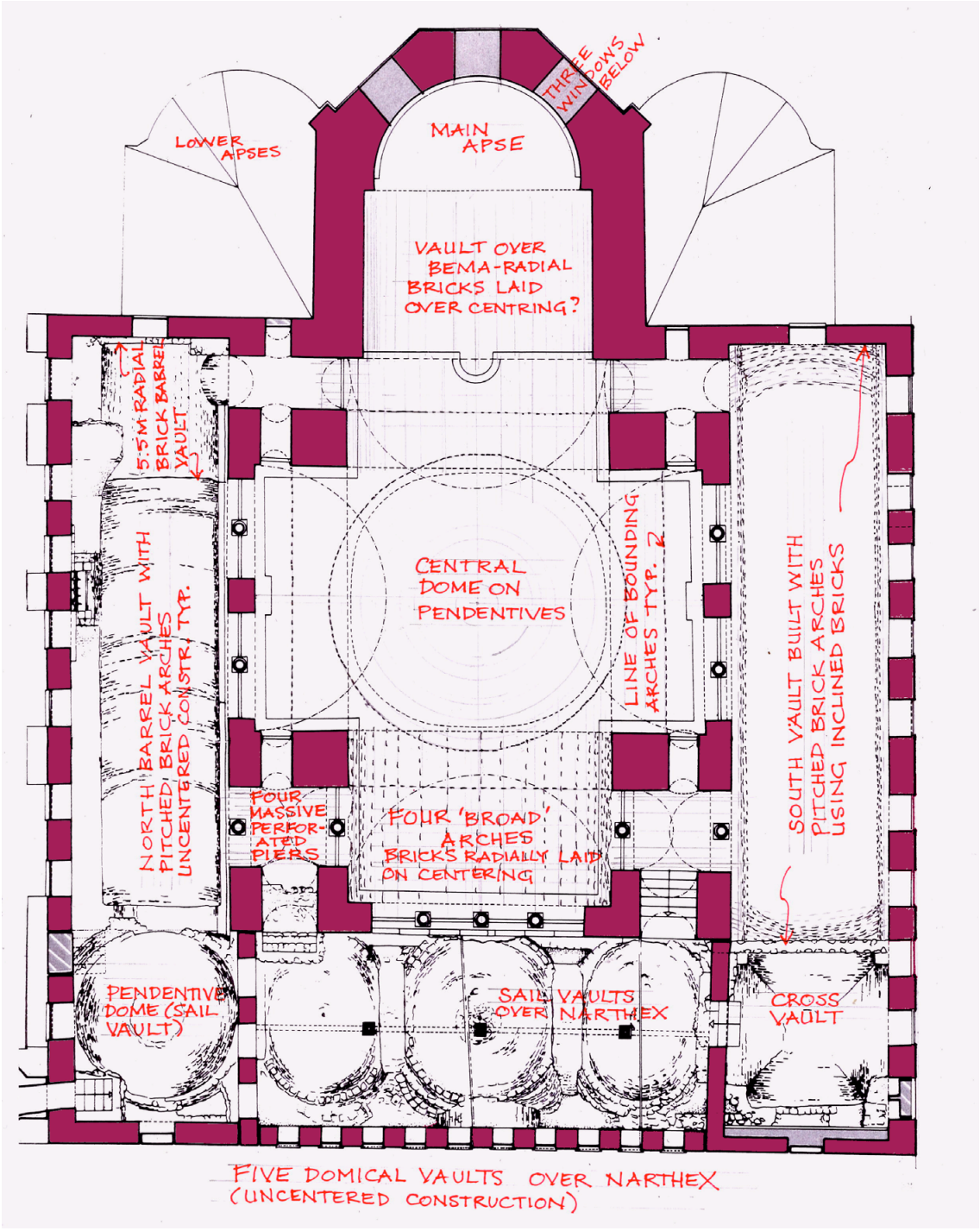


FIG. 12 Above: Annotated plan at the balcony level, showing the core naos (Dome and Four Great Arches), and the peripheral buttress zones as a distribution of the smaller domes and vaults (5 narthex domes, north and south long vaults, 3 apses to the east). *Source: Survey Theoharidou (1994), with additions and annotations by Author*

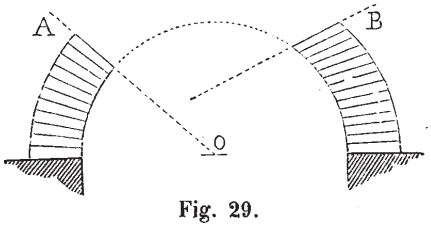


Fig. 29.

FIG. 13 Right: Methods for constructing arches, vaults, and domes; A) brickwork radial to the centre, B) brickwork inclined to allow construction without centering (supporting formwork). *Source: Choisy (1883, Fig. 29 p. 31)*

Masons, as an intergral part of Byzantine society, established a protected niche for their work. The guilds continued into the following centuries and were an active political force within Constantinople and most likely participated in the processional litugies.[33]

> Artisans were organised into guilds (*systemata* or *somateia*), which, in the tenth century, were privileged corporations with voluntary membership, and which were protected from the competition of non-guild members. ... Byzantine guilds were subject to governmental control, but direct services to the state appear to have been minimal. Urban guilds played a role in the Imperial triumphs and other ceremonies. (Ousterhout, 1999, p. 49)

The head of a workshop or of the guild was also called a *maistor* or *proto-maistor*.[34] He bore responsibility for the building, much as a building contractor does today. According to the *Book of the Eparch*,

> "Those who build walls and domes or vaults of brick must possess great exactitude and experience lest the foundation prove unsound and the building crooked or uneven." For brick buildings, builders were held accountable for ten years after construction, and with mud-brick construction, they were accountable for six years, barring natural disasters. (Ousterhout 1999, pp. 49 to 50)

The 10th century Book of the Eparch is our only record of the masons' working practices. Compiled under Leo VI 'the wise', it recorded the laws of commerce and the rules and regulations which governed the craftsmen of that time. As a testament to the importance of the skill, experience, and continuous tradition of the masons, Ronald Walkey (1993, pp. 136-137) reminds us that, they were the only craftsmen's guilds not disbanded, who continued to work in the Ottoman empire.[35] Today a few masons' guilds (*Isnaf, Bouloukia*) survive in Greece.[36]

33. According to Zanini (2007, p. 396) *'The* oikodomoi *- frequently united in professional guilds, the nature of which are depicted by the famous mid-5th c. inscription from Sardis - appear to have been the true bearers of practical knowledge.'This made them fundamental to the transmission of material culture between generations, since it was they who interpreted and passed on regional building traditions.'*

34. Master masons are mentioned only occasionally, mostly in texts that do not concern architecture, for example, *'Georgios Marmaras of Thessaloniki is identified consistently with his title, protomaistor ton oikodomon or protomaistor ton domitoron (master of the builders), in several documents from Mount Athos (1322–27)'* (Ousterhout 1999, p. 49)

35. See Appendix for my interviews with Master masons from the traditional Bouloukia in Epirus. In his essay 'A Lesson in Continuity: The Legacy of the Builders' Guild in Northern Greece' Ronald Walkey (1993) considers the survival of Byzantine guilds under Ottoman rule from the 15th century. *'One source suggests that they continued uninterrupted under Ottoman rule (Jelavich 1983, p. 62), while another concludes that all guilds were either discontinued or disrupted, save for one: the builders' guild (Moutsopoulis 1967, p.102). Recognizing the need for mosques, bridges, and monuments to give physical claim to the new empire, the builders' guild, or isnaf as it as called in Greek, was allowed to continue.'* (Walkey, 1993, pp. 136-137)

36. See Appendix A of this thesis for interviews with members of the remaining Boulouki tradition in Epirus, Greece. Some of this fieldwork is transcribed in the Appendix.

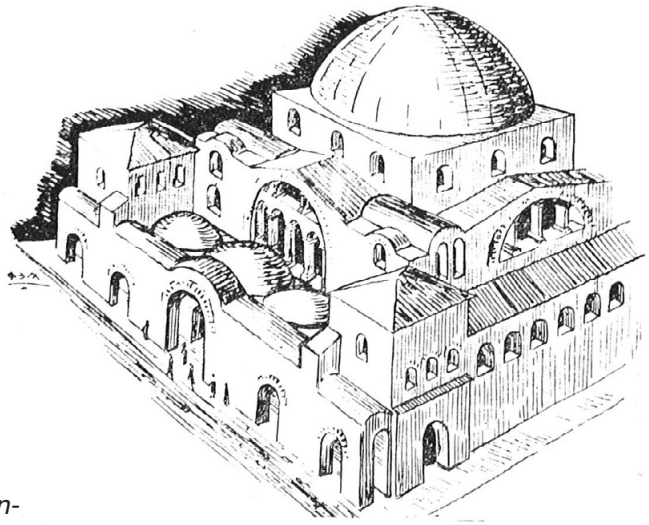


FIG. 14 Upper left: Axonometric reconstruction of Hagia Sophia on completion of its second phase of construction.

Source: Pelekanides In: Theocharidou (1994, p.87)

FIG. 15 Middle: The compass principle, showing how the circle can set out the square and the octagon. The detail of the line suggests a woven or linked material. It seems to be looped around a dot in the centre, perhaps the central stake at the 'omphalos'.

Source: Vatican Library, Rome, MS gr. 1605, In: Ousterhout (1999, p. 75)

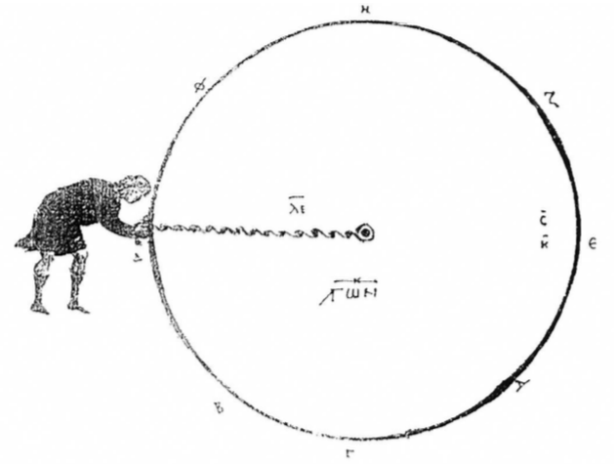
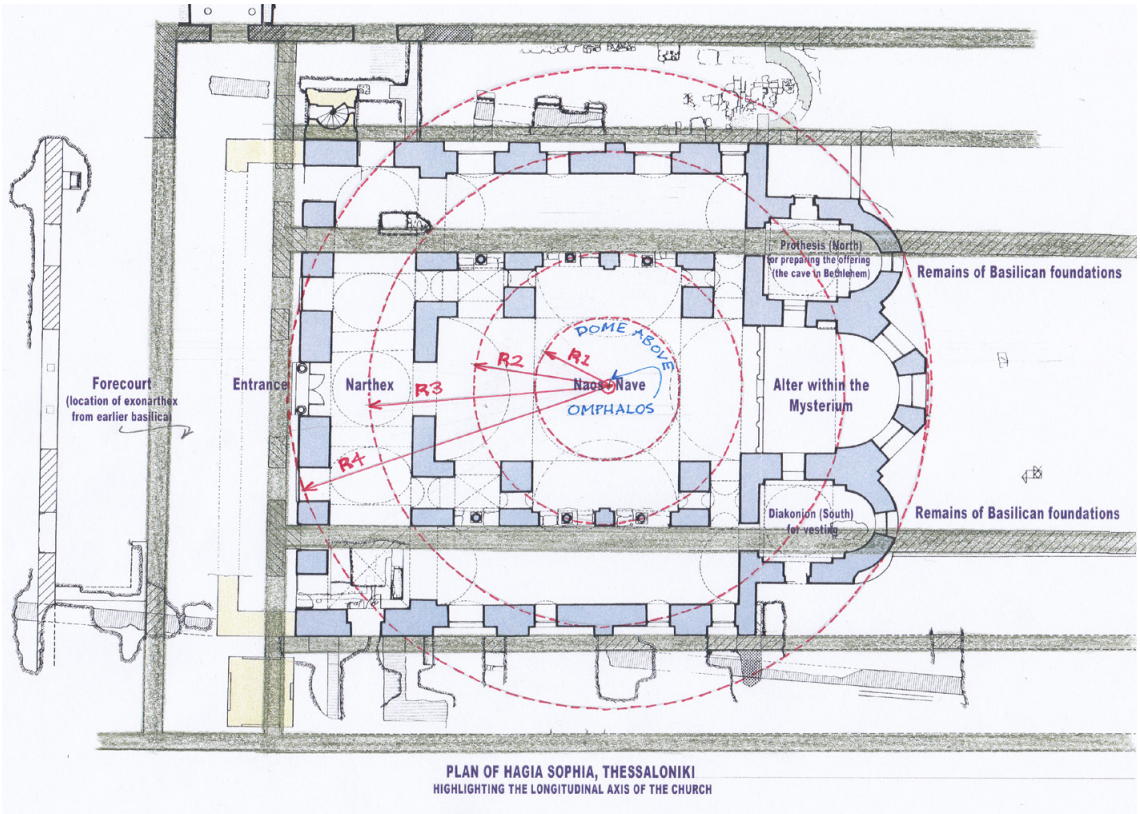


FIG. 16 Bottom: A series of concentric circles could have been scribed by the Master mason from the central point (omphalos) to position the dome-in-cross building without bearing on the pre-existing Basilica's foundations, but benefitting from their proximity.

Source: Theocharidou, 1994, annotated by author



The Master masons were the inheritors of much earlier methods of building dating as far back as the 3rd millenium BC, which were then modified by Greek and Roman builders to be better suited to the local materials and climate requirements. Despite being connected by ancient tradition, there are important differences between the inclined brickwork methods of Tel al Rimah in the 2nd Millenium BC, the 3rd century Rotonda of Thessaloniki, the 3-6th century vault at Ctesiphon palace, and the transitional churches in Asia Minor and the 8th century Hagia Sophia in Thessaloniki. Nevertheless, the greater tradition of unsupported masonry is particularly evident in Hagia Sophia's narthex and side aisle vaulting.[37] It was out of a long, living tradition of masons that the Byzantines fashioned what they needed for the celebration of their religious culture.

The next section follows how the church of Hagia Sophia, and its conceptual protoype, communicates by analogy with the masons and their construction practices. I will try to compare the series of analogies that the mason experiences with the ritual stages of the eucharist, and the hierarchies and geometries which are graphically notated by iconography. The next several sections of this thesis will suggest a masons' *mystagogia* as they built the church hands-on, step by step, from bottom to top.

5.6. Setting out the church as the Chora, using the 'Chi-Ro'

From its foundations to its rooftop, a Byzantine church defined the concept of sacred space for a community.[38] It defined a *chora* of sacred space within infinite space. Marking the first foundation lines on the earth was a ritual action made with consecration prayers.[39] According to ancient convention and popular piety, a person with divine inspiration was required to translate divine intention into human action.[40] For example, the Emperor Constantine I delineated the walls

37. In Hagia Sophia Thessaloniki, the four broad arches or short vaults which support central dome have been built with precision, using temporary centering in the style of the Roman Rotonda's church, extended in the 8th century. On the other hand, Hagia Sophia's secondary domes and barrel vaults have been built with softer, less precise lines using pitched brick vaulting, a technique which the Romans had adapted from the Mesopotamian deserts of the Persian empire after their campaigns. Writing of the vaulting techniques that characterise the flourishing of late Roman and Byzantine construction in the ports of Asia Minor such as Ephesos, and also in Thessaloniki, Lancaster (2015, p. 64) suggests that *'a close examination of the details of the earliest Roman examples in Greece points to Parthia as a more likely source of inspiration.'*

38. A Cathedral was more than a church dedicated to a saint or the burial place of a leader.

39. The prayer in memory of the consecration of the church of Hagia Sophia, Thessaloniki, is reprinted in full in Phountoules' edition of ***Symeon, Archbishop of Thessaloniki: The Liturgical Commentaries [Συμεών αρχιεπισκόπου Θεσσαλονίκης τὰ λειτουργικὰ συγγράμματα.]*** (1968, #21, pp.49-51). The relationship between newly-consecrated and previously-consecrated sites is not known.

40. Pre-Christian Greco-Roman towns were founded by setting up the *temenos* (greek) or *templum* (latin) only after confirming divine disposition with augury, peformed by skilled survey-

of the new capital, following Christ as the one who indicated the divine requirements.[41] In the Narratio de S. Sophia, verse 7, 'the shape of the church was revealed to the Emperor [Justinian] by an angel of the Lord'.[42] To establish the foundation lines of a church, a holy man such as an archbishop or an abbot of a monastery, would probably have delineated the perimeter.[43]

Hagia Sophia's conservative design would have been typical of an *architekton* or Master mason of the period responding to the programme of its owners and funders.[44] The Master mason would have needed to set his first post into the ground and set out the masonry design within the remains of the former 5-aisle basilica (see Figs. 15, 16, 17).[45] He may have used instruments similar to those of Greco-Roman surveyors - 'the use of ropes suggests a similarity be-

ors. See Rykwert's (1976) ***The Idea of a Town*** (pp. 47-51) for the relationship between Roman augury and the surveyor's art.

41. The hagiographic story tells of the Emperor Constantine drawing the perimeter of Constantinople, who, *'personally traced out the line of the walls with his spear - replying, when his companions showed astonishment at its length, with the words: "I shall continue until he who walks ahead of me bids me stop".'* (Norwich, 1009, p. 326)

42.Lidov (2007, pp. 142-144) explains the direct involvement of the Emperor with his architects, Master masons, and masons in his role as a 'maker of sacred space' and references both Procopius and the Narratio de S. Sophia. The latter recounts the masons' interaction with the building, Verse 7 reads, *'There were a hundred master craftsmen (maistores), and each one of whom had a hundred men, so that all together there were ten thousand. Fifty master craftsmen with their people were building the right-hand side, and the other fifty likewise were building the left-hand side, so that the work would proceed quickly in competition and haste. The shape of the church was revealed to the Emperor by an angel of the Lord.'* (Mango 1972, p. 96)

43. *'The vita of Saint Simeon the younger, from the sixth century, records that the plan of a trefoil martyrium was traced on the ground. A similar situation is recorded in the apocryphal Acts of the Apostle Thomas of perhaps the third century. Thomas, a carpenter, was taken to India to build a palace for the king: "And the apostle took a reed, measuring the place, and the doors he set towards the sunrising [...] and the windows towards the west."'* (Ousterhout, 1999 p. 64) Describing the role of the Bishop in making 'the abode of God', Symeon of Thessaloniki (2011, sect. 15 - 16, p. 89) writes: *'Thus, although the temple consists of worldly material, it nevertheless posseses otherwordly grace, for it is conscrated by the bishop with mystical prayers and anointed with divine chrism, and the whole of it is made into the abode of God. All of it is not accessible to all: one part is for the priests, the other part for the laity. Being twofold, with a sanctuary and an outer part, the temple depicts 1) Christ Himself who is twofold, being at the same time God and man, invisible and visible respectively and 2) likewise man, consisting of soul and body, but above all also, 3) the mystery of the Trinity, which is unapproachable in its essence, but made known by its providence and its powers.'*

44. There are no records of a mechanikos, nor drawn plans for churches after the 6th century, however, Ingold (2013, pp. 49-50) clarifies how the title *architect* came to be identified with the *mason* who in turn was identified with the *mechanikos*. *'The architect in mediaeval times was as commonly a mason as a carpenter there were many similarities in their respective working methods (PC 2007 87) and the skills of masonry and carpentry were not infrequently combined in one and the same person. In an influential statement the seventh century scholar Isidore of Seville had identified the architect as a mason (masonieum), a word that he derived, in turn, from the Latin machina, meaning the hoist that is required to lift heavy materials in constructing the high walls and roof.'*.

45. *'Although there is no evidence of floor plans, the on-site work should also be considered the "drawing" - that is, a necessary part of the process used to co-ordinate the various features of design before the construction began.'* (Ousterhout, 1999, p. 64)i

tween the process of surveying and the process of laying out a building on-site.' (Ousterhout 1999, p. 60).[46] He would have staked out the plan full scale on-site giving him and his team of masons the essential features of the building such as dominant dimensions, main geometry, major openings, and the placement of domes and vaults (see Figs. 19, 21, 24). Communicating the 'framework' of the building happened through a pre-determined system such as the 'quadratura', either known by heart or taught to the apprentice masons by the *architekton*.[47] According to the research of both Buchwald and Oikonomou, proportion and repetition of standard dimensions were used for setting out the framework of Byzantine churches. Systems of proportions might be 2:1, 8:5, 3:2, 4:3, and the golden section.[48] In Hagia Sopia one can see the ratios of 2:1, and 3:2 as well as the golden section.[49] Common factors are the use of the rope to scribe circular measurements, which was knotted to make the 3:4:5 triangle, and harmonic proportions, applied in the plan, section and facade.

The ability to visualise accurately even before doing a drawing is the most prized fruit of experience.[50] Therefore, while theory was a component of the Master mason's education, the experience of apprenticeship was essential; one had to 'know the ropes'. This is most evident in the way their drawing was the 'geometric projection of a conceptual image' but it was a 'geometry informed by a tactile and sensuous knowledge of line' (Ingold , 2013, pp. 50-51). Their 'geometry was not just practical but more precisely, constructive' and the 'lines were intensely physical, drawn with) ropes' (ibid. p. 54).[51] To the Master mason

46. Roman surveyors used the *sciotherum* (σκιόθηρον), *gnomon* (γνώμων), *stella* (ἀστερίσκος), which in Varro and Pliny were used to set the point of the umbilicus, and the directions of the *cardo* and *decumanus*, to define a *templum/temenos* (Rykwert, 1976, pp. 49-50). These are well depicted on funeral stelae of surveyors (Adam, 1989, pp. 10-11)

47. See Buchwald's (1999, p. 298) description of *quadratura* in Middle Byzantine Churches.

48. These derive from Oikonomou's (2012, p. 497-499) analysis of several 15th - 16th century churches in north-western Greece. To quote him, *'Based on the analysis of the plans, the monuments are divided into five basic categories: i. Churches with plan proportions 3:2, where the tracing is based on two consecutive right 3-4-5 triangles (21 churches); ii. Churches with plan proportions 4:3,where the tracing is based on one right 3-4-5 triangle (13 churches); iii. Churches with plan proportions 1.618:1, 21:13 or 13:8, where the tracing is based on the golden section' and so on.* See also Buchwald's essay, 'The Geometry of Middle Byzantine Churches' In: (1999, Ch. XI, pp. 293-321)

49. Theocharidou (1988, p. 93) gives a ratio 1:3. for Hagia Sophia in a list of the *'approximate ratio of the depth of the lateral cross arms to their span (or the diamater of the dome)'* in which she compares this ratio in 9 Transitional churches.

50. Drawing at the sketch design level is frequently a method of testing hypotheses objectively when the mind of the designer cannot fully grasp and visualise. But reliance on objective means of visualisation can lead to a lack of focus and coherence which the architect of a masonry building cannot afford; there are no steel tension members or connector plates to smooth over a loss of clear logic.

51. *'Their straight lines were not the notional point-to-point connectors of Euclid, but actual lengths of chord pegged out on site and at full scale. The points were nails or stakes, hammered*

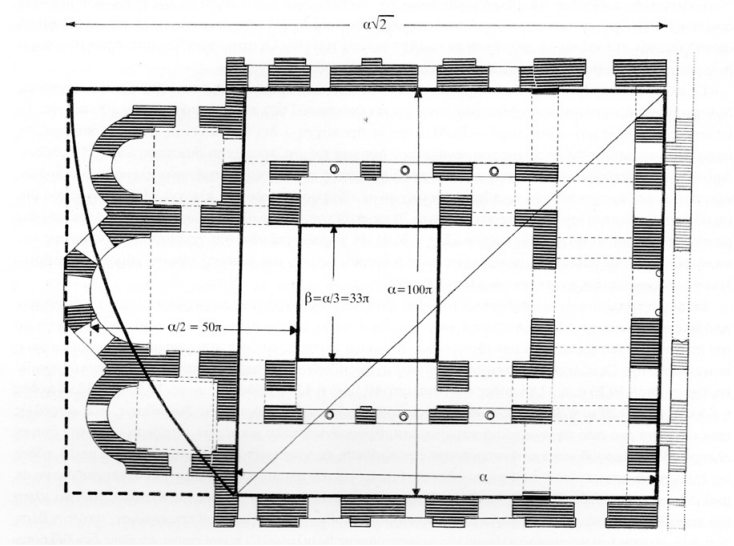


FIG. 18 Above: Theocharidou's analysis of Hagia Sophia's plan providing the dimensions of a 100 ft. square (Byzantine feet).
Source: Theocharidou (1994, p. 52)



FIG. 17 Above: Roman surveyor's tools on his tombstone. 'Funerary stele of an agrimentsor from Ivrea (Val d'Aosta), showing a dismantled groma and its plumb lines.' (Adam, 1999, p. 11).

FIG. 19 Below: Proposed system of setting out the plan of Hagia Sophia from a central point using the radius to generate the geometry of 2, 6, 12, and 4. In this proposal, the Master mason used the principle measurement of the radius of a circle which divides the circumference into six. In principle, A circular geometry based on the radius (R) between a centre and a circular perimeter makes 6 equal divisions. The six equal divisions based on the radius can be divided into 12, using intersecting arcs. With the geometry of 12, the masons could have set out a square plan with great ease and accuracy; no accurate measuring tape, trigonomic calculations, or laser instrument is required since it is pure geometry that decides length and breadth and their divisions. From the radius (R) derives the diameter (2r) by the symmetry of mirroring.
Source: Analysis and annnotation by author.

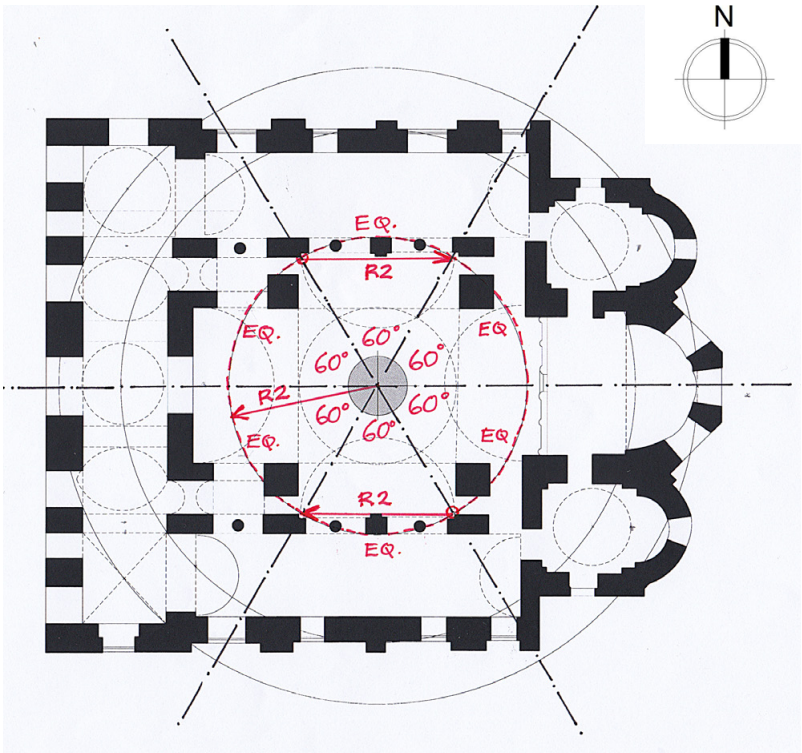




FIG. 20 Above Middle: 'chi-ro' (χ-ρ) figure denoting the method of setting out a chora (χωρα). (The abbreviation for Christ at the centre of a circle containing an abbreviation for the alphabet.)

'there was no radical division here between drawing and building' (ibid. p. 56). In fact, Ousterhout (1999, p. 64) suggests that 'perhaps it is more important to think of design and construction not as two seperate exercises but as interrelated and simultanous activities.' The mason would have used his rope together with his plumb line (thin rope with lead weight on the end) to achieve the planimetric and vertical proportions measured in Byzantine feet.[52] Generally the Master mason began with,

> ... one dominant measurement that could easily be divisible by ten, and was often divided by two, to obtain important measurements in the design of the church. The dominant measurement would normally be the span of a vault or dome. Measurements were based on a foot (pous) of about 31.5 cm, which was divided into sixteen daktyloi. (Ousterhout, 1999, p. 75)

Theocharidou (1988) has proposed how the *architekton* did his setting out for Hagia Sophia (see Fig. 18).[53] However, given the constraints of the pre-existing basilica on this site, and the need to balance the massing of a domed building around its central axis in this seismically active zone, it would seem better if this dimension were the radius of a circle (see Figs. 15, 16).[54] Commenting on Constantine of Rhodes' description of the architects setting out the church of the Holy Apostles, his translator, Liz James remarks,

> 'what Constantine appears to do is to come to a standstill and locate himself in the centre of the church under the main dome, as he described how the architect laid out a central cube ... Constantine's description conveys a sense of the church being built around the fixed, static central point ' (2012, p. 198)

The church's proportions derived in Byzantine feet (Theocharidou 1988, p. 52) can be simplified and clarified if one assumes the masons' actions are symbolic as well as practical.

Since everything begins from God as the 'source of all the emanations', ineffable, incomparable, energy in potential, whose place is beyond the world

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into wood or ground. And the figures of the geometry were not empty outlines but solid weighty pieces with tangible surfaces and edges, cut and shaped from wood or stone.' (Ingold, 2003, p. 54)

52. According to Oikonomou (2012, p.497) *'The Byzantine metric system was based on two different measures: the Byzantine spithami (handbreadth equal to 23.4 cm) and the Byzantine foot (31.2 cm). The spithami is divided into 12 daktyloi (fingers), whereas the foot is equal to 16 daktyloi. It should be noted that 4 spithamai are equal to 3 feet (93.6 cm). During survey and construction the master builders also used the orgyia (210.8 cm), which was usually a reed or stick divided into nine spithamai or 108 daktyloi. For land measurement, the schoinion (rope) equal to 10 orgyai, was used.'*

53. See Theocharidou (1988, pp. 25-29) for her explanation of dimensions and proportions and (ibid. 1994, p. 52) for her analysis of the layout and dimensions of the church.

54. Theocharidou (1988, p.8) lists four earthquakes with epicentres in Thessaloniki and Thrace, in the 7th century.

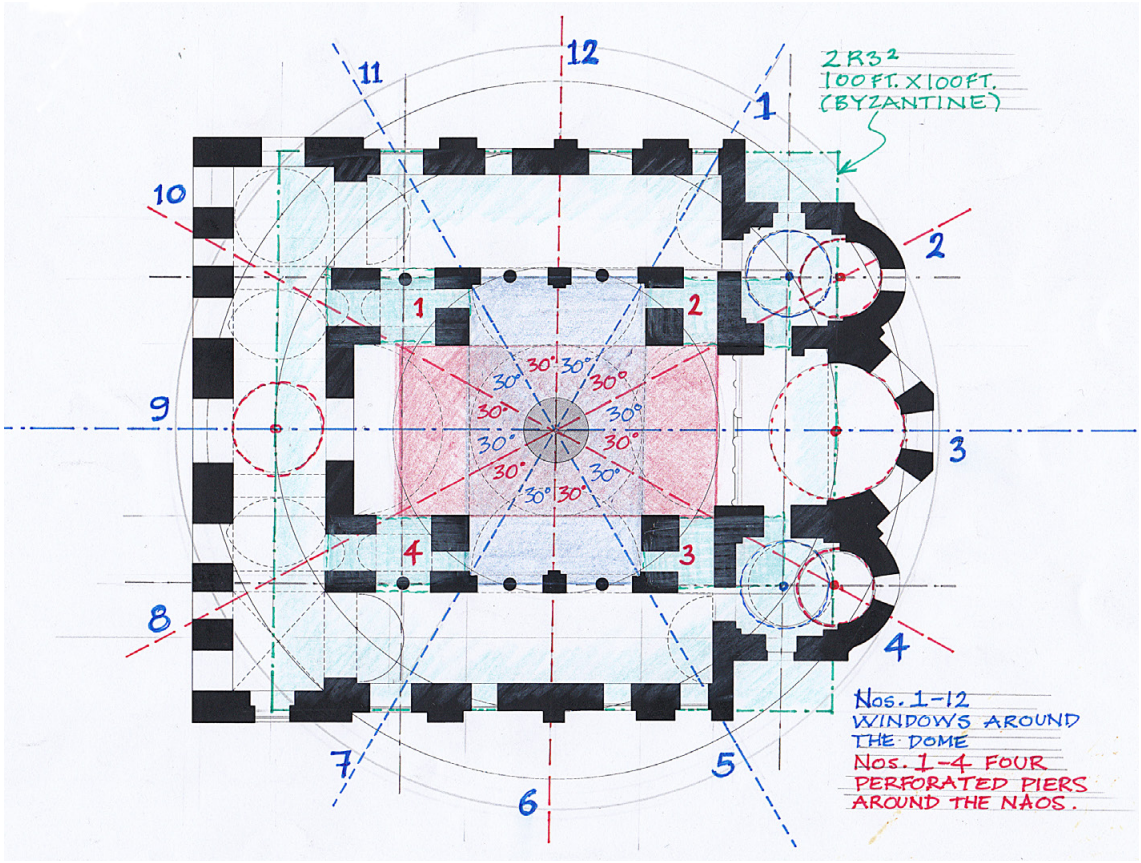


FIG. 21 Above: Deriving the plan of Hagia Sophia from a central point: After establishing 4 circles, the Master mason could have used the radius to generate the plan. Based on the radii, the point expands via circular geometry the 6, 12, 2 and 4 to lay out the building plan. The radial lines meet the circles to create orthogonal axes; a square of 100 ft. (approx. Byzantine ft.), primary and secondary axes for the central crossing and the apse and dome centres. The 12 divisions convert into the square geometry of 4 to create the lower structure, including the 4 massive piers around the naos. The geometry of 4 solstices and equinoxes derived from the 12 constellations in astronomy to signify the earthly realm as a reflection of the celestial one (see Ch. 4). It is reiterated in the 12 windows around the dome, and the figures of the 12 apostles and 4 archangels of the analipsis mosaic. The square geometry of the church's ground level reverts back to circular in stages; peripheral apses, vaults and domes, the great arches (like rainbows), the pendentives, and finally it returns, like the Created World, to the unitary centre at the summit of the main dome. All this action of forming the church's geometry is in accordance with Byzantine theology, exemplified by Dionysios' and Maximos' Mystagogia. This creates a very tight and precise geometry. Source: Drawing by author.

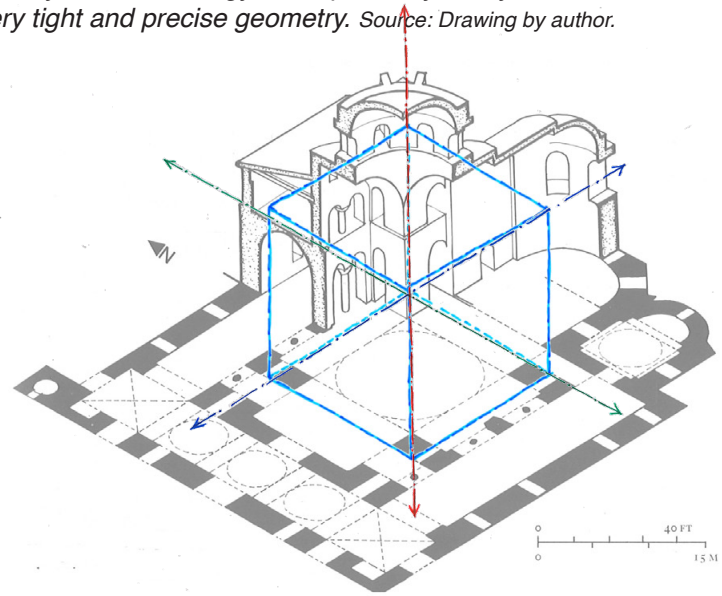


FIG. 22 Left: Cut-away isometric of Hagia Sophia, Thessaloniki, showing the three axes of the 'chi-ro'; the 'intangible centre' at the heart of the dome is directly above the centre of the cubic naos.

"κύβος δὲ γραμμὴ τετρασύνθετος πέλει ἴσας ἔχουσα πάντοθεν διαστάσεις" (Rhodes, In: James, 2012, ll. 554-555, p. 56)

Source: Krautheimer (1986, p. 291) with annotations by author.

yet within the world, theology tells us to generate the church's plan from the centre. Then all the spaces around it fall into place geometrically. Extending the first rays from the centre, (the 'essence' and the 'dispensation' of the Sougitha's third line), the first in the order of creation is the dome (the heavens). In Hagia Sophia, the span of the main dome (its diameter) divided by two is the first 'ray', its radius. The diameter can be seen as two hands with ten fingers, and the radius a measure of five, in tune with Pythagorean numerology.[55]

In structural logic, the dome's perimeter massing refers to a centre, as do its perimeter buttressing of walls, vaulting and smaller domes. If there is to be a correspondance of theology and architecture, then logically all the parts of the domed Hagia Sophia should refer to a central point.[56] The Master mason's first stake in the earth brought divine intention to a point from which everything radiated, where the *omphalos* stone is set into the floor today (see Figs. 19, 21, 24).[57] The geometry of the church, from the layout of the square *naos* to the summit at the centre of the main dome could have been set out from the central point. Using the radius dimension, any circle can be divided exactly into six on its circumference. From the six can be derived twelve which then gives us four corners of a square making the setting out of the church a mirror of the cosmos, with its twelve constellations and 'quadrangular earth'.[58] This could be double-checked on site with Pythagoras' 3-4-5 triangle to verify the right angles.[59]

55. This numerology also tallies with with Maximos' reference in his Mystagogia to the story of the ten virgins, five of whom, like the five senses in Chapter 4 on liturgy, entered with the bridegroom. cf. Joost-Gaugier, C. (2006) ***Measuring Heaven: Pythagoras and His Influence on Thought and Art in Antiquity and the Middle Ages***. Cornell University Press: Ithaca and London for Pythagorean numerology in late Roman and early Christian architecture. Much of the Pythagorean numerology of Hadrian's Pantheon (113-125 AD) can be found in Hagia Sophia. According to Joost-Gaugier (2006), the Pantheon's circular plan, central axis, hemispherical dome, and alignment with the four cardinal directions symbolize Pythagorean views on the order of the universe. The single oculus at the top of the dome symbolizes the monad and the sun-god Apollo. The twenty-eight ribs extending from the oculus symbolize the moon, because twenty-eight was the same number days in the Pythagorean lunar month. The five coffered rings beneath the ribs represent the marriage of the sun and moon.

56. Referring to the **'Design and Tracing of Post-Byzantine Churches in the Florina Area, Northwestern Greece',** Oikonomou (2012) mentions *'the use of constructional tracing based on the application of the Pythagorean Theorem'* (p. 496) and, *'Cerasi mentions that "the analysis of plans and elevations of buildings by Balkan masters has shown the existence of proportions and tracing inscribed in circles"* (p. 499)

57. See Glossary for *omphalos* (lit. navel of the earth). This corresponds with the umbilicus of the Roman surveyors in setting out a templum.

58. See De Santillana and Von Dechend (1969, p. 62.)

59. *'The explanations for laying out a military camp may give some indications of the process as practised: the perimeter of a rectangular enclosure was established by a measuring rope extended in four directions from the midpoint of the camp. The military treatises do not, however, give directions for determining if the enclosure is actually square; diagonals are not measured, and the angles go unmentioned.'* (Ousterhout, 1999, pp.74–75 Presumably they either felt that the use of radial geometry was self-evident, or that the military had surveyors with a groma (gnomon).

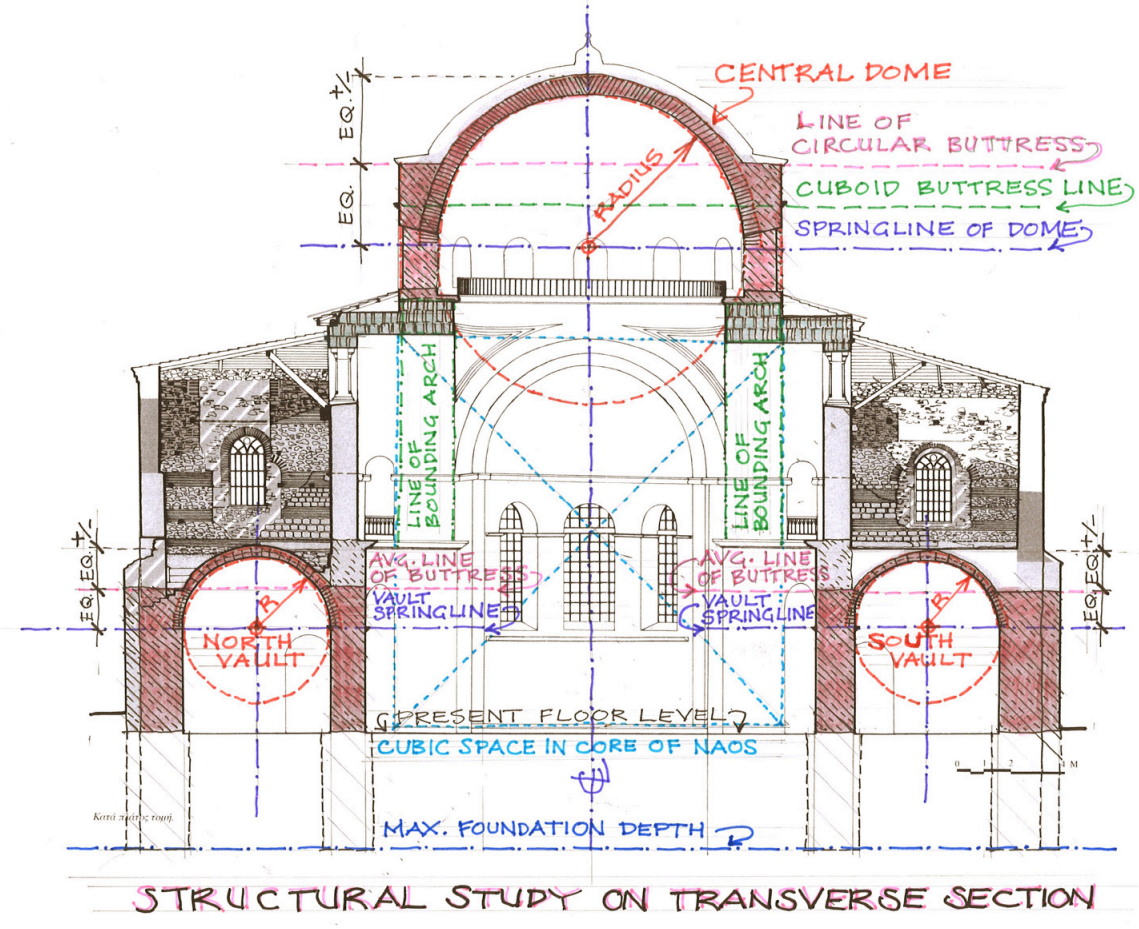
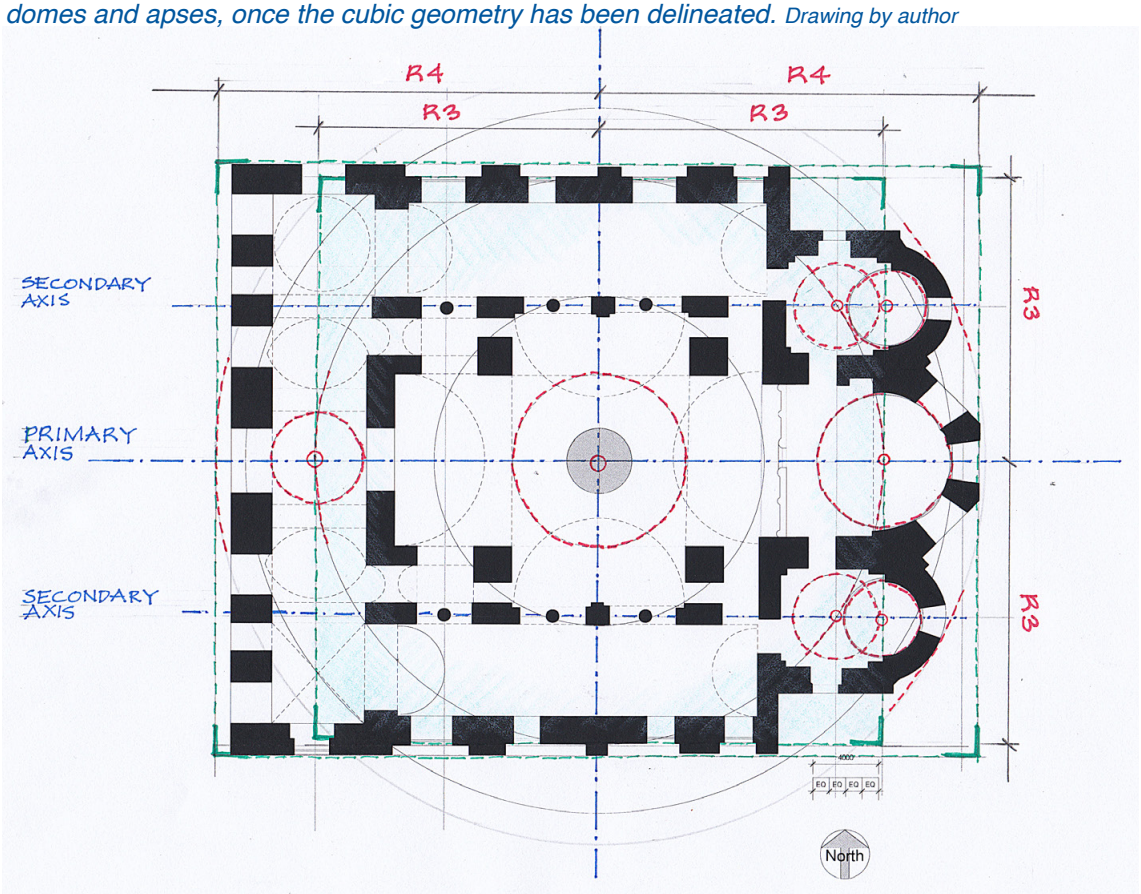


FIG. 23 Above: Section of Hagia Sophia showing essential geometries relative to the structural mass. *Source: Section by Theocharidou (1994); Sketch study annotations by author*

FIG. 24 Below: Primary axes and dimensions of the building, with centres of the significant domes and apses, once the cubic geometry has been delineated. *Drawing by author*



In the case of Hagia Sophia the building was set out within the ruins of the former 5-aisle basilica (see Figs. 2, 16). The 7-8th century domed cathedral literally emerged out of the ruins, a historical moment of transformation, from the directional basilica to the cross-domed church.[60] At its central crossing is the sacred space of the *naos*, where the people assembled as the *ekklisia* (church). They were one body as Christ, the divine human, in the words of Maximos the Confessor,

> ... the holy church is like a man [human, *anthropos*] because for the soul it has the sanctuary, for mind it has the divine altar, and for the body it has the nave. It is thus the image and likeness of man [human] who is created in the image and likeness of God [...] Man [human, *anthropos*] is a mystical church because through the nave which is his body he brightens by virtue the ascetic force of the soul by observance of the commandments in moral wisdom. (Maximos 1985, pp. 189-190)[61]

By identifying the human (*anthropos*) in the 'image and likeness' of God, with the collective body of Christians (*ekklisia*) and the physical church as its analogy, the church also became a mirror of the divine community as a city. Its essential features made the ideogram of the Roman city, as a crossing within a walled enclosure.[62] In the Analipsis mosaic the vertical 'axis mundi' is made between Christ and the Holy Mother (see Ch. 4, Fig. 37). The geometric resonance with the dome mosaic suggests 'a close working relationship between artist and mason and leaves open the question of whether certain protomaistores might have been both painters and masons.' (Ousterhout, 1999, p. 260).

Six directions make up the three dimensional cross of the Christian 'chi- ro' symbol, which was imprinted on a wide range of artifacts with the alpha and

60. See Ch. 4 Figs. 41, 42 for a study of the composition of the Theotokos and Christ child, relative to the cross-domed unit within the basilica, that is geometric and theological at the same time.

61. Maximos here uses the word *'anthropos'* in Greek, meaning 'human'. English translations use the word 'man', thus missing an important distinction in translation. Maximos is referring to Christ's energetic body, or heavenly body. This would be more in keeping with St.Paul's saying that, *'There is neither Jew nor Greek, there is neither bond nor free, there is neither male nor female: for ye are all one in Christ Jesus'* (Galatians 3:28, KJV) and also, *'For as the body is one, and hath many members, and all the members of that one body, being many, are one body: so also is Christ. For by one Spirit are we all baptized into one body, whether we be Jews or Gentiles, whether we be bond or free; and have been all made to drink into one Spirit. For the body is not one member, but many.'* (Corinthians 12:12-14, KJV)

62. This ideogram, though not by any means exclusive to the Roman city, was undoubtedly familiar to the citizens of the Roman empire. See Rykwert (1976, p. 48, Fig. 6) The two principal Roman crossing streets, the 'cardo' and 'decumanus', met at the central forum under the heavens. Typically, the forum was flanked by civic buildings including the basilicas for civic transactions and judgements. But the four directions to north, south, east, and west are incomplete without the vertical 'axis mundi', between earth and heavens.

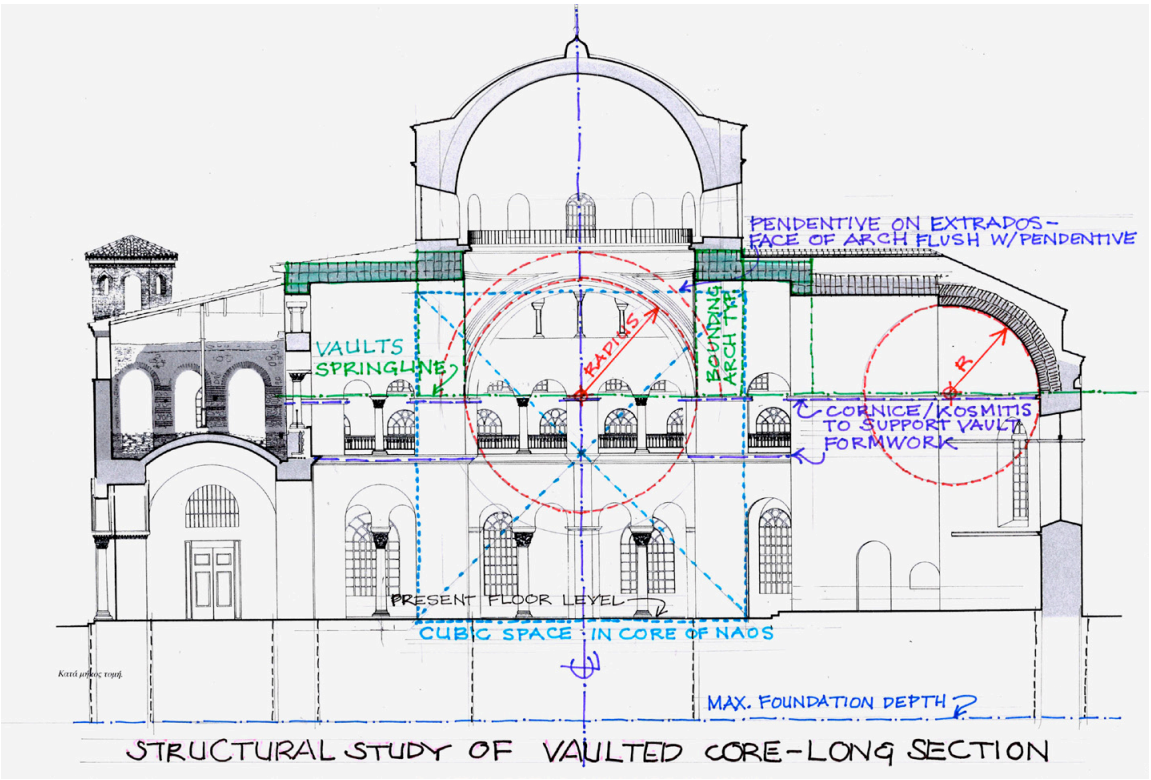


FIG. 25 Above: Section of Hagia Sophia showing essential geometries relative to the structural masonry mass. Source: Section by Theocharidou (1994); Sketch study annotations by author

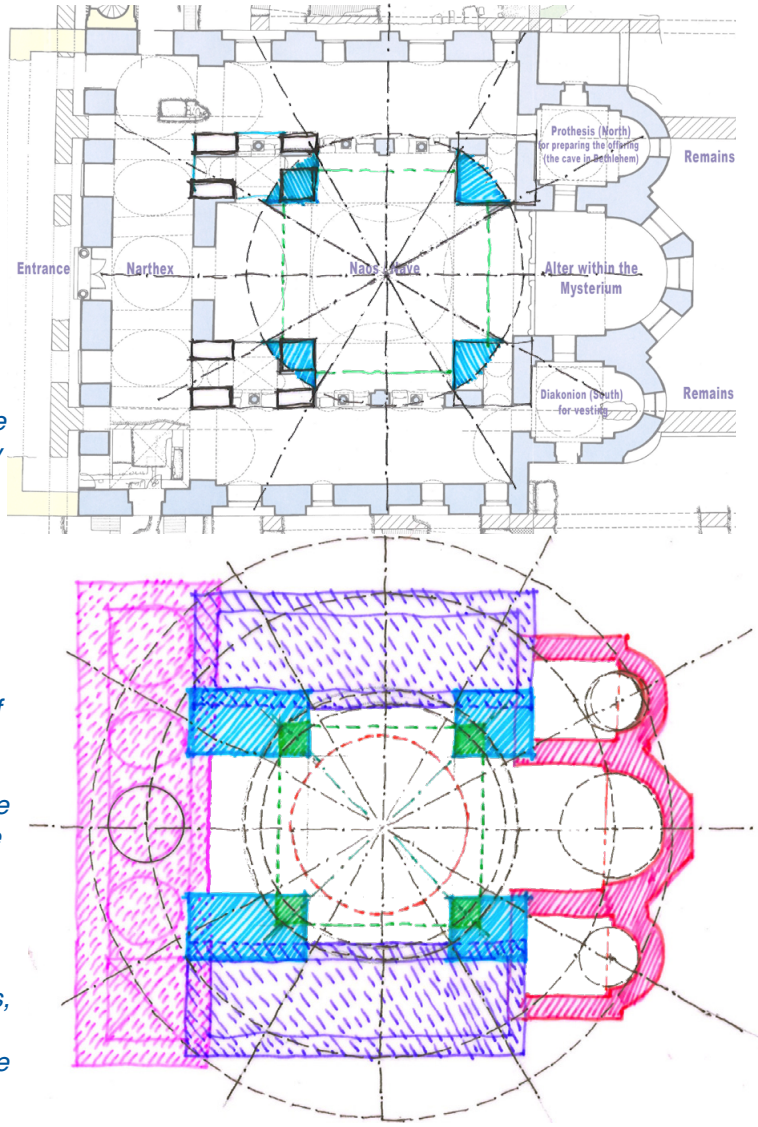


FIG. 26 Right: Author's interpretation of setting out of the four of piers in (Constantine of Rhodes, 2012, ll. 557-569, pp. 56-57): 'The craftsman, having marked this [linear, grammike] cube and its cubed form [schema] on the surface of the ground joins the corners accurately through porticoes [thrusting-in, wedge-shape, embolous] on the ground, four turned to face one another, all corners double, double in well arranged form. He joins the cubical masonry piers, equally four in number, through porticoes (embolous) to those four corners of which I spoke, piers that are four-sided and fourfold in composition, intended to bear in safe position the central dome and the vaults. To the many sides from one mid-point he attached these vaults facing each other, all drawn up double, like a cross ...': Four internal piers sit directly beneath the bounding arches, and four 'perforated piers' create the vaults, buttressing them and the main dome. Drawings by author

omega letters on either side (see Fig. 20).[63] In Hagia Sophia, Thessaloniki three axes, with six directions, were established by the images of Christ and the Holy Mother.[64] The vertical axis of the church community coincides with the centre of the dome over the *naos* precisely at the *omphalos* in the case of Hagia Sophia, Thessaloniki. The three axes of west-east, north-south, up-down which converge at the centre, are the essential lines for setting out the building (see Fig. 22). These three lines are like the laser co-ordinates used for setting out buildings today. The 'chi-ro' letters taken with the alpha and omega spell the word *chora* (ΧΩΡΑ), whose imprint contained all the letters of the alphabet between alpha and omega and all the Divine Names of which Dionysios wrote.[65]

Let us assume that after the prayers of holy men and the blessing of the extents of the church, the Master mason came and made good a firmly planted central stake. Hagia Sophia's *architekton* set out the parameters of the building in plan and section through his stakes and lines made with ropes and

63. The 'chi-ro' was common on late Roman/Christian sarcophagoi, on mosaic pavements, on pottery and stonework, on liturgical artifacts and vestments, in manuscripts, on baked bread offered for the eucharist, on signet rings, on coins of the realm, and more. Some etymologists believe the Greek 'X' (chi) to have derived from the Phoenecian sound 'S' which derived from the ideogram of a fish. Others assign it an extra letter at the end of the alphabet around the 6th century BC. The letter 'P' (ro), in all the alphabets of the near east, Semitic (Hebrew, Aramaic, Arabic), Phoenecian, and Greek, was associated with the ideogram of a head (rosh or resh). The word chora (χῶρα) is thought to be carried over from the indigenous Lurian language, before its bronze age assimilation into Greek and, on the other hand, into Hittite. Possibly the curled top of the letter 'P' ro, bears some relationship to the curled ends of the iconoclastic cross which are currently called 'drops'. And possibly the drops are simply a representation of divine bounty and the 'distillation' of the hierarchy of creation.

64. See Ch. 4 (Fig. 9, p. 226) for the use of iconography to identify the parts of the crossing. According to Isar (2009, p. 39),"...the iconic inscription/graphe is instrumental in revealing the sacrosanct presence of the Incarnation.'

65. This *chora* of the church that the masons of Hagia Sophia, were tasked to build, was also understood as a mirror of the cosmos proceeding from the central point of the omphalos and returning to it again by circling around it. Isar (2004, p. 71) considers Paul the Silentiary's treatment of the central point in his *ekphrasis, 'suddenly his discourse becomes emphatic and returns to the central space of the church and the dome ... "Whither am I driven? What wind, as upon the sea, has carried away my roaming speech? The center of the church, the most glorious place (chôron húperkúdanta), has been neglected. Return, my song, to behold a wonder scarcely to be believed when seen or heard" (444–447)' ...* and further she quotes Dionysios regarding the movement in relation to the centre, *'One can perceive in this movement certain reliance upon Pseudo- Dionysius' notions of "procession and return", a Platonic and Neopla- tonic twofold structure, which provides the framework for his theological method and cosmology: "To those who fall away it is the voice calling, 'Come back!' and it is the power which raises them up again. It refurbishes and restores the image of God corrupted within them. It is the sacred stability which is there for them when the tide of unholiness is tossing them about. It is safety for those who made a stand. It is the guide bringing upward those uplifted to it and is the englightenment of the illuminated. Source of perfection for those being made perfect, source of divinity for those being deified, principle of simplicity for those turning toward simplicity, point of unity for those made one; transcendentally, beyond what is, it is the Source of every source" (The Divine Names, p. 51, 589C). What Pseudo-Dionysius meant by this call back was the urge to restore the unity lost by falling off from the One; the radiation from the One is countered by an inherent longing for the return to the original source and the state of unity.' (ibid. p. 71)*

inscribed on the earth. Constantine of Rhodes' *ekphrasis* describes this process for the church of the Holy Apostles, yet we can understand almost the same process here.[66] From this diagram set out on the ground the church of Hagia Sophia, as a material massing, will be built upwards and inwards in stages from the outer perimeter to the centre.[67] The lowest peaks of this metaphorical mountain of rocks, stone and bricks, will be the secondary vaults of the side aisles, the lower two eastern apses, and the five secondary domes over the narthex. Above them the two short towers at the entrance, and the upper galleries will not need to be completed until the very end of the project.[68] Further inwards and upwards on the four massive piers they will build the four 'broad arches' (four primary vaults), and the main central apse to the east, and above them the pendentives and drum of the dome. Finally, at the peak of this metaphorical mountain in the very centre they will build the main dome itself (see Figs. 14, 23, 25).

The centre of the naos, the *omphalos (umbilicus)*, is thus of utmost importance to be assured of symmetry around the heavy central dome, as well as to better unify the movement of the structural mass during a seismic event. If the church were not designed by plan, section, and elevation (our orthogonal projection), an alternative is a system of three axes that references one centre. This appears to be Cartesian yet its manifestation in Hagia Sophia would not have been solely cartesian when we consider its 8th century theological and cultural context. Its

66. cf. Constantine of Rhodes' ekphrasis describing the first figure inscribed on the earth by the mason, *'... the one who completed this church ... after having marked out the linear form of a cube ... The craftsman, having marked this cube and its cubed form on the surface of the ground, joins the corners accurately through porticoes [inset parts, entrant corners] to those four corners of which I spoke, piers that are four-sided and fourfold in composition intended to bear in safe position the central dome and the vaults. To the many sides from one mid-point he attached these vaults facing each other, all drawn up double, like a cross, then he fixed the wondrous form itself towards the east, the west and the south and the north, a great five-composed house with the revered from of the cross; he raised, he stretched out, he unfolded it, having covered the roof with as many domes as the arches he had unfolded in a circle, weaving on both side vault upon vault, weaving again together cylinder with cylinder, binding one pier to another pier ...'* (In: James, 2012, p. 57, ll. 549-579) and James' commentary: *'Constantine of Rhodes 'presented [his audience] with the architect as geometer, constructing the church [of the Holy Apostles] around a cube, or square, from multiples of two and four, wonderfully creating a mystical building of which the ultimate architect was God the Creator himself.'* (ibid. 2012, p. 198).

67. Ousterhout, (1999, p. 64) is of the opinion that *'planning continued through the construction process'* as a general principle of building Byzantine churches. Mainstone (1988, p.185) emphasises the structural importance of *'the sequence and progress of construction'* in his monograph on Hagia Sophia, Constantinople; a principle which applies to any substantial project. Therefore it is the geometric and iconic 'framework' (πῆγμα, see Rhodes, In: James, 2012, l. 589, p. 58) that must hold the project together conceptually for both Ousterhout and Mainstone's principles to apply. This architectural 'framework' (πῆγμα) could be characterised as a builder's 'tone' or 'maqam' equivalent to that of music.

68. The towers shown in Pelekanides' sketch (FIG. 14) seem to confer some buttressing effect to the dome and primary vaults, but their construction materials and Theocharidou's (1994) survey drawings indicate they were constructed in a later phase. Logic tells us that they would have hindered the free flow of materials during the intial construction.

three axes may have been seen as a symbol of the Trinity.[69] The seventh direction is the middle of the 'chi-ro' (the six directional cross).[70] This is the direction of turning within at the heart of the crossing.[71]

Marking the perimeter of any building circumscribes infinite space and can be seen as a 'performative spatial icon' (Lidov, 2011).[72] It provides an analogy with which the masons could contemplate the Byzantine theology of the incarnation, the circumscription of the ineffable in Christ as *logos*, and upon creation as a whole.[73] We saw in Chapter 4, how the experience of the liturgy circumscribes a ritual space by sending out the catechumens (or the heretics and apostate in the time of Symeon) from the *naos*, closing the doors, and beginning the Liturgy of the Faithful with the Great Entrance.[74] As the masons literally and symbolically circumscribed space and constructed its container, they too could 'work though' how to stand in the *chora tou achorytou*, the 'place of what is beyond place'.[75]

69. See Figs. 22, 23, for the geometry of the three directions centred on the *naos*, its cubic form, and the windows behind the altar in the main apse, which were taken to symbolise the Trinity in *ekphrasis*. In a short passage by Evagrius the Solitary, introducing 153 verses of advice on prayer, the intellect, demons, emotions, he writes of how number was percieved in the 4th century, in the Philokalia (1979, Vol. 1, page 55-56) *'The way of prayer is also twofold: it comprises practice of the virtues and contemplation. The same applies to numbers: literally they are quantities, but they can also signify qualities. ... The triangle indicates spiritual knowledge of the Trinity, the hexagon indicates the ordered creation of the world in six days. The number 100 is square, while the number 25 is triangular and spherical, 5×5 being 25. In this way, you have a square figure to express the fourfold nature of the virtues, and also a spherical number, 25, which by form represents the psychic movement of time and so indicates true knowledge of this present age....'*. Constantine of Rhodes refers to an equivalence of number and line, "ἴσας ἔχουσα πάντοθεν διαστάσεις ἔιτ' ἐξ ἀριθμῶν, ἔιτε δ' οὖν καὶ γραμμάτων" (In: James, 2012, ll. 555-556, p. 56)

70. Early 20th century historian Hugo Rahner explores the symbolism of the *'chi-ro'*, *"It is particularly in Byzantine devotion that this cosmic interpretation of the mystery of the cross lives on. 'O Cross, thou atonement of the universe,' runs one of these panegyrics, 'thou boundary round the wide spaces of the earth, thou height of heaven and depth of the earth, thou binding bond of creation, thou that art the width of all that is visible and the breadth of the whole world."* (Rahner, 1971, p. 52) He is quoting St. Andrew of Crete (660-740) archbishop and writer of hymns. Born into a Christian family at Damascus, he was the originator of a new liturgical form, a long type of hymn called the *'canon'*, which later became shortened and was called the *'kontakion'*.

71. Isar writes (2004, p. 72), *'The principle of Sophia is the principle of return into oneself. ... the vision described by Paul [the Silentiary] is that of a building construed after the principle of the Divine Wisdom, which could be imagined as a space turning inwardly.'*

72. On the creation of sacred space by ritual actions related to an image-paradigm, Lidov (2011, p.42) writes, *'... the Heavenly City was not formally depicted but spatially present as a vision, created by various media which included not only architecture and iconography but particular rites, liturgical prayers, the dramaturgy of lighting, and olfactory elements, such as incense and fragrance. Clearly, in the Byzantine capital the level of sophistication and aesthetic quality of the project considerably differed from that of a remote village, but the principle of the image-paradigm, remained constant in the concept of a sacred space.'*

73. See Ch. 4 Figs. 41, 42 comparing the apse mosaic with the plan of the church.

74. Symeon (2011, v. 59, p.123) comments on the exclusion of certain groups during the liturgy.

75. The usual translation 'container of the uncontainable' does not fully represent the original words, therefore in this thesis it is sometimes translatied 'place of what is beyond place', and at other times more literally as 'the space for which space cannot be made'.





FIG. 27 Above left: The Roman nymphaeum archaeological site, lies next to a crypt-church of St. John the Baptist under the road, connecting to catacombs. Photo by author.

FIG. 28 Above right: Natural spring water still flows into a 20th century marble basin for ablutions, with the palindrome ΝΙΨΟΝΑΝΟΜΗΜΑΤΑΜΗΜΟΝΑΝΟΨΙΝ (wash away sins not only in appearance). Photo by author.

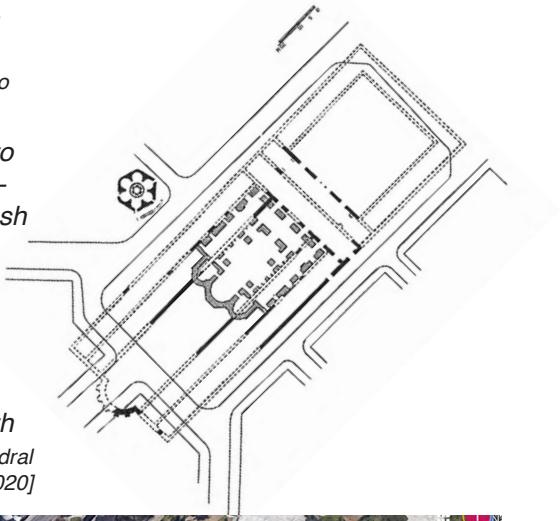
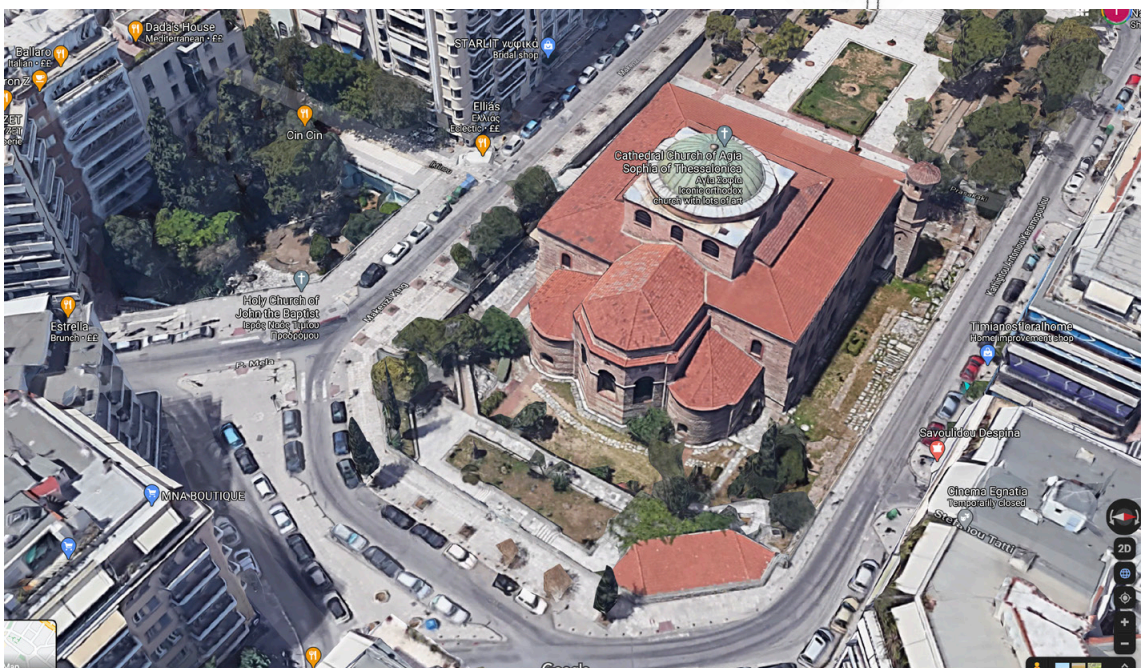


FIG. 29 Right: Location of the nymphaeum relative to Hagia Sophia. Source: Velenis (2004)

FIG. 30 Below: Aerial view from the east. The sunken garden to the south contains the remains of the Nymphaeum, and the basilican walls are visible to the north (RHS) Available from: https://www.google.com/maps/place/Cathedral+Church+of+Agia+Sophia+of+Thessalonica/ [Accessed: 29 Aug. 2020]



5.7 The Stages of Construction:

5.7.0 Foundations and subterranean waters

Pragmatic needs at this level of Hagia Sophia's architecture were to build firm foundations in a soft and silty, clay-rich subsoil with subterranean waters, amid of the ruins of the earlier basilica.[76] In this, the builders were continuing a pre-Christian tradition of building a shrine over a source of water.[77] Today, the archeological remains of a Roman nymphaeum fed by a sacred spring lie at a lower level to the east end of Hagia Sophia (see Figs. 27-30).[78]

For the Master mason, these subsoil conditions led him to make the foundations very deep and broad.[79] The excavations of the late 1980s reveal that they reach as deep as those of the earlier basilica and in some places deeper, up to 4.5 metres below the present floor level.[80] They are built with the local uncut grey-green schist stone, possibly with reused spolieia from earlier basilican walls. The relationship of the two foundations shows that the Master mason understood the 'base isolation' principle for seismic stability, used today in skyscraper foun-

76. Theocharidou (1988 pp. 125-126) considers the construction of the two basilicas beneath Hagia Sophia by comparing brick tile sizes and construction details with those of the Basilica of St. Demetrius, and the Rotonda of Galerius (305-311 AD). As its materials come closest to the Rotonda, she tentatively gives the date of construction in the late 4th century. In his monograph on the basilicas underneath Hagia Sophia, Mentzos A. (1981, pp. 201-221) dates the early Christian one that lies directly under the present church to the 5th century. In general though, both basilicas fit into the Roman plan of Thessaloniki, in close alignment with the Rotonda of Galerius, in continuity with Roman architectural forms and construction methods.

77. The majority of Christian churches of any antiquity can trace their foundation to a sacred spring, in care of the Holy Mother. Her epithet 'life-giving spring' (*Zoodochos Pigi*) is indicative.

78. The earlier Christian basilica, dedicated to St. Mark (Velenis, 2003, p. 63) was originally associated with a Roman nymphaeum and baths. Possibly Mark's association with the lion had picked up on an earlier dedication of the natural spring. The present archaeological site connects into an underground network of aqueduct-tunnels which extended far into the city. Part of these became Christian catacombs and a baptistry. Today, the water still flows five metres underneath the church, where the tiny crypt-chapel of St. John the Baptist tucks under the road to the north-east. Ablutions can be made in the small fountain outside. Inside Hagia Sophia a piece of the marble flooring, with an iron ring set into it, is the cover for a well below the church. Until the 1950s - 1960s water used to be drawn up from the well for baptisms and ritual washing.

79. Alluvial deposition has formed the subsoil conditions in the region of Thessaloniki. According to Gazetas and Botsis (1981, pp.1206-7), *'They basically consist of several layers of silty sand and sandy clay of a total thickenss of 10-15 metres. These are underlain by a stiffer deposit of marly clay and overlain by several metres of debris and compact fill.'*

80. See Theocharidou (1994, p. 177). She discounts Kalligas' view of the new foundations being combined with the old, since her research benefits from the excavations of the late 1980s. These show the new church's foundations to be separate, often parallel, as deep as, and often deeper than the original 5-aisle basilica, up to 4.5 metres below the present floor level, and made with the local green schist stone liberally mortared and layered with brick bands, as were the walls above. The use of the local stone below ground highlights the intentionality of the white limestone in the walls above ground which were built to be seen. See also Metzos (1981, p. 209-210) for further detail on the foundation depths of the earlier basilica and the changes in site elevation over the years.





FIG. 31 Above: The present front (west) facade of Hagia Sophia showing the foundations of the 4th century basilica which formed the outer narthex. These were built with rough grey-green schist stone, interleaved with bands of bricks

Note: The original narthex had five doors to the west. Today two doors have become windows, and the two small windows were never doors.

Photo by Author.

FIG. 32 Below: On the east facade of the church, relieving arches at the base of the two smaller apses span over the older basilica foundations, to "base-isolate" the new church. The line of the basilican foundations is today marked by the red paving in the foreground.

Photo by Author.

dations. He was probably considering the risk of 'liquefaction' during a seismic event, when water-logged earth behaves like a fluid.[81] The mason positioned his new foundation walls within the basilica's substructure, but not bearing on it (see Figs. 2, 16, 31, 32). The old substructure provides buttressing on three sides against lateral thrust from the new dome and side vaults. New relieving arches at the base of the eastern apses were built to span over the basilica's long foundation walls (see Fig. 32). They isolate the older heavy foundations from the new, and allow them to move independently.[82] During an earthquake, this 'base-isolation' allows the cross-domed church to move as one piece. It reduces stresses higher up the building thereby reducing the risk of collapse.

A heavy masonry building can can take years to settle after construction. It can lose half a metre of height due to the weight of the superstructure. Combine this with differential settlement (uneven settlement) of the foundations in a moist clay subsoil, and the superstructure can become unstable. Therefore, in addition to the depth and width of the foundation walls, the masons used brick bonding courses as horizontal bands to disperse the settlement stresses throughout the wall. These are part of the inherited tradition of Roman Thessaloniki and are evident in the 3rd century architecture of Galerius.

At the same time, one can view the mason's art, the method of the *architekton*, as using architecture's material analogies to convey spiritual concepts during construction.[83] The tangible foundations of a cathedral must be stable and strong, and the symbolic foundation must communicate the stability of the Absolute within the ever-changing earthly realm.[84] We have seen this concept notated in icons by a hidden centre connected via a divinely ordered hierarchy to subterranean waters. If the mason's eyes were looking for an analogy for the

81. Engineering technical term for the behaviour of water-logged subsoil during an earthquake. This effect occured in the 1978 earthquake which damaged Hagia Sophia. (Gazetas & Botsis, 1981, pp. 1205-1213).

82. Velenis (2003, p. 65) notes this feature as a solution for static pressures, without mention of base-isolation or seismic precautions.

83. These views or vignettes are suggested in the spirit of Lidov's 'perfomative icon' and Isar's 'Byzantine chora', and similar to the iconographer's method according to Ouspensky, Pearson, and Temple, to which I referred in the previous chapter. These are included in order to stimulate a more open discussion of how the architectural symbolism of *ekphrasis* might interact with the experience of useful work. 'I too, running a double course inspired by God' wrote Constantine of Rhodes (In: James, 2105, p. 47) implying that his physical description contains spiritual analogies. He then 'weaves' his metaphors together 'on both sides' in very practical language, '... having fixed stable foundations to them, walls and strong unyielding bases...' (ibid. p. 59).

84. The Sougitha describes Hagia Sophia in Edessa as representing the cosmic order and the metaphor of undergound water was a tangible reality as it was surrounded by the Skirtos river,
'Clearly portrayed in it are the mysteries of both Your Essence and Your Dispensation.
He who looks closely will be filled at length with wonder.
For it truly is a wonder that its smallness is like the wide world,
Not in size but in type; like the sea, waters surround it'. (Sougitha, In: MvVey, 1983, p. 91)

eternal stability of God within the changeable and unstable realm of the senses, he might understand the haptic level of his work, that makes the circuit of the walls, as providing both spiritual and earthly stability in Hagia Sophia's site with underground waters.[85]

Barry (2007, p. 634) reminds us that the Byzantine 'earth' existed between the waters above the firmament, and the waters below the earth.[86]

> 'For when its shimmering surface [the marble floor] lay beneath an overarching dome of luminous gold, the whole construct became a simulacrum of God's separation of the waters in Genesis 1:2-8.'

The image of waters flowing beneath the earth was frequently expressed through the wavy streaks of grey and green rippling across the marble flooring of Byzantine churches; a fine example exists in the nearby Acheiropoietos basilica.[87]

At the top of the foundations, in Hagia Sophia's construction sequence it would have been necessary to set some parts of the marble flooring on top of the foundations to indicate the finished floor level, as well as set in place the marble slabs which will bear the interior columns.[88] It is logical that the masons would have created areas of accurate flooring level as a register to which they would measure the height of the walls using their plumb lines according to the pre-determined geometric 'framework' (πῆγμα) set by the architect.[89]

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85. Isar (2004, p. 74) refers to Paul the Silentiary's *ekphrasis* of Hagia Sophia in Constantinople, *'The sea is the floor of the Great church (263f). Paulus' description seems to resonate a long tradition in which Platonism and Judaism meet, and which associated the temple to the cosmos, and viewed the cosmos as a temple. Josephus' (1st c.) description of the three regions of the temple is meaningful: the Holy of Holies as the heaven; the holy place as the earth; the surrounding court as the sea; the bronze basin or 'sea' in the inner court'*

86. We have seen this belief of the time presented Cosmas Indicopleustes' diagrammes in Chapter 4, where the 'earth' was depicted as a mountain between the cosmic waters. In the same article Barry (2007, pp. 627-628) refers us to the *ekphraseis* of Paul the Silentiary, the Narratio di St. Sophia, and that of Michael the Deacon, for their metaphysical descriptions of Hagia Sophia Constantinople's marble floor as an ocean.

87. *'There were probably others, but today the only surviving Byzantine church that shares with Hagia Sophia [in Constantinople] the distinction of a floor entirely fashioned from Proconnesian marble slabs is the Acheiropoietos in Thessaloniki, a mid-fifth century structure, but one whose paving might date from the mid-seventh.'* (Barry, 2007, p. 629)

88. According to Mainstone (1988, p. 185) the following would have been the construction sequence of Hagia Sophia in Constantinople, *'Around these carefully prepared foundations the area of the future floor would have been brought to the same level to allow the final precise setting out to be done and construction of the peers to proceed. At this stage, those marble slabs of the floor which bear setting marks for the column basis must have been set in place, followed bye the bases themselves.'*

89. At some point a firm flat surface (probably a sub-floor) would have been needed to access the site and use the interior efficiently as a working and measuring space.

5.7.1 The bearing wall construction and the building materials

The wall construction method of the masons was typical of the walls of Byzantine Thessaloniki. They were built with the materials of the mountain, its rocks and earths, as marble, bricks and lime, looking like the strata of rocks in a mountain. From the 3rd century Thessaloniki of Galerius onwards, we find the local grey-green schist-like stones, liberally mortared and levelled off around every 35 cm, known as rubble masonry walling. After somewhat less than a vertical metre, a band of 4-5 rows of interlocking brickwork makes the circuit of the building (see Figs. 33-36).[90] The materials of the mountain were the face and the body of the walls of St. Demetrios and the Acheiropoeitos basilicas, with their rough, grey-green stone from the city's acropolis and the red bricks from clay below the agora of Thessaloniki and environs.[91]

The Romans' original structural concrete was a mass of rubble-like stones and coarse sand, cemented by pozzolanic earths from the volcanoes of Vesuvius and Etna.[92] These walls were faced with cut stone and nicely worked slabs of marble, or terracotta and coloured stucco, in the Roman aesthetic of decorated building exteriors. Facing materials were attached to the wall using a horizontal ledge of bricks that had been pressed into the surface of the concrete.[93] Since Thessaloniki has no pozzolanic earths, they manufactured a substitute slurry of pulverised brick, kiln-fired lime, sand and water.[94] The expense of firing and pulverising the raw materials limited the uses of this slurry to durable mortar and a pink stucco.[95] Unlike in Rome, these brick bands penetrate the entire wall thickness, alternating with 'lifts' of rubble walling up to the top cornice.[96] In Thessaloniki, such levels built the city walls, Galerius' triumphal arch, his pal-

90. In his analysis of masonry methods David Talbot-Rice (1958) writes of Thessaloniki's 3-4th century late Roman buildings that, '... resemblance to Byzantine methods of building is far too close to be accidental. These vaults [the Rotonda of Galerius] and the more fragmentary, but essentially similar, vaults of the Arch of Galerius are enough to show that, in its vaulting, as in the structure of its walls, the Salonica of Galerius anticipates much that is typical of the local architecture of succeeding centuries. (Talbot Rice 1958, p. 90)

91. For known locations of brick workshops, see Antonaras (2019, p. 47). Thessaloniki's Roman forum was renowned for its ceramics workshops, which use the rich clay in-situ. Ceramics production on this site dates back to pre-historic times.

92. See Talbot-Rice (1958, p. 86) in *Building Methods of Early Byzantine Architecture*, for analysis of Roman buildings with this technique.

93. Between these rows of bricks they also pressed more pieces of bricks or stone into the soft concrete surface before it had set, making the patterns called 'opus reticulatum' and 'opus incertum'. This provided a firm backing for lime stucco as well as for marble facing slabs.

94. This was called *opus signinum* in Latin

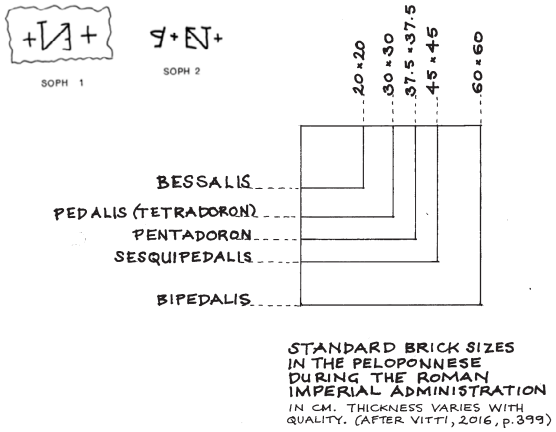
95. It was even successfully used for lining water cisterns and baths. The 14th century Byzantine baths in Thessaloniki were lined with opus signinum, or Byzantine mortar, to retain the water and provide a durable finish in the wet heat.

96. See Talbot-Rice 1958, pp. 77-95 for a detailed evolution of technique historically.



FIG. 33 Top left: A portion of the 3rd-4th century walls of the Palace of Galerius, now within the modern city, showing the 'rubble walling' method of constructing the bearing walls in 'lifts' of the local grey-green schist, bonded with 4-5 rows of mortared fired bricks which were laid through the entire depth of the wall. Despite the name, the stones are well chosen and carefully laid. Photo by Author.

FIG. 34 Mid-Below: Standard sizes of Roman bricks in Greece. Drawing after Vitti (2016, p. 399); and brick stamps from Hagia Sophia. Source: Vickers (1973).



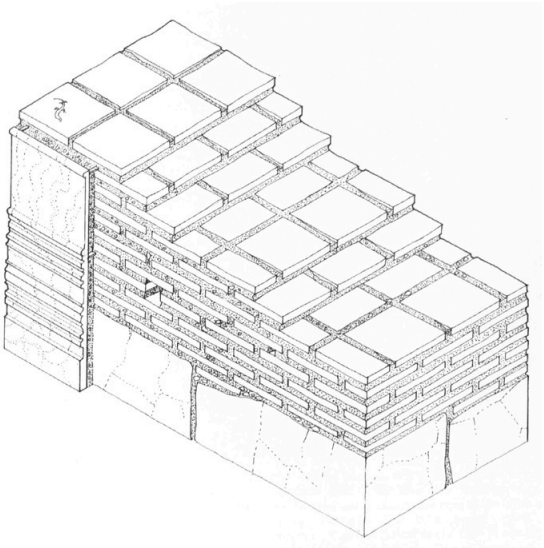


FIG. 35 Mid Left: Axonometric of typical brick bonding courses of St. John the Theologian, in limestone bearing walls. Source: Karydis (2011, p. 56)

FIG. 36 Below: Wall of the nearby mid-5th century Acheiropoeitos Basilica, built with the same technique. Photo by Author.



ace, the rotonda, the Roman forum and the basilicas, and the same method was used throughout the eastern Roman empire. The bands of bricks were no longer a surface treatment on concrete hidden by facing materials of plaster and marble, they had become the essence of the very wall itself.

Hagia Sophia differed in one respect: Between the fired bricks made from local clay, and the pink mortar of white lime and crushed red bricks (or other terracotta products), the visible exterior walls of the first phase of construction comprise ashlar blocks of white limestone, replacing the usual materials of rough grey-green local stone. The material of white limestone was brought from quarries, which were possibly several hours distant from Hagia Sophia's building site by mule or ox-cart. Once at the site it could be worked by hand tools, hammers and chisels, into blocks by masons and their apprentices. Often the kilns to make lime were at the limestone quarry. However, given the distance from the building site, just as we today might set up a batch plant for making concrete for a large project, so the builders of a large project like Hagia Sophia may have set up kilns to make the lime close to the project site.[97] We see the proximity of a kiln to a building site in Sicily's 11th century mosaics (see Fig. 11).

The bricks would likely have been made close by from the clay earth under much of Thessaloniki's environs.[98] It is likely that they would have come from one of the regulated brick yards locally. According to Antonaras (2019, p. 21) 'several brickyards were operating in the city' though specifics for the 8th century are not available.[99] From the evidence of local brick stamps, Vickers' (1973,

97. See Adam (1999, pp. 65-73) for the methods of late Roman lime production, and its descendents today. According to Antonaras (2019, p. 20) lime kilns were forbidden in the Roman city of Thessaloniki, however one from the 7th century was situated within the Ancient Agora.

98. Transporting the bricks from afar would have added expense and technically, any landscape with suitable clay-rich earth and a source of fuel could produce bricks in-situ in a clamp or a scove. The nearby forum had been a rich source of clay producing pottery since antiquity, however, brick production tended to be outside the city (Antonaras, 2019, p. 47). Brick and tile production was regulated in the later Roman and Byzantine empires, according to Lancaster (pp. 66-68), and this system of regulation was closely connected with *'the profit-making potential'* of brick production and the land-holdings of the elite families.

99. See Antonaras, A. (2019) '**Arts, Crafts and Trades in Ancient and Byzantine Thessaloniki Archaeological, Literary and Epigraphic Evidence',** Eds. Bosselmann-Ruickbie, A. and Ruickbie, L., *Byzanz zwischen Orient und Okzident* 2, Mainz: Leibniz-WissenschaftsCampus. *'We can argue that production continued into the fifth century because parts of several early Christian monuments - the Basilica of Hagios Demetrios, the Acheiropoietos Basilica, the five-aisled basilica underneath Hagia Sophia and the Christian parts of the Rotonda - are made with bricks marked with the same stamps. Production sites for bricks and roof tiles have been unearthed on the plain west of the city walls, which was partly a marsh until the late nineteenth century, at the site known from sources from the second half of the sixth century or seventh century as the keramēsios kampos (κεραμήσιος κάμπος, pottery plain). Previously, these were considered to have been contemporary with the historical sources, although most of them have now been redated to the Late Byzantine period.'*



FIG. 37 Left: Detail of the base of Hagia Sophia's exterior wall showing thick mortar layers made with hydraulic lime, pozzolanic pulverised brick and larger brick and stone aggregate. Photo by author.

FIG. 38 Below: Detail of exterior wall showing an area of recently cleaned and re-pointed work, and an area with the remnants of older plastering and re-pointing. Certain areas of walling allow a view through to the original mortar. Note: The two putlog holes for the masons' scaffold; the lower one has been neatly re-filled, as they all were originally.
Photo by author.



p. 289) article tells us that older bricks from the 5-aisle basilica were also built into the new church (see Fig. 34).[100] The 'seconds' or low-fired inferior quality bricks (or other products such as terracotta tiles) that result from clamp or scove firings, could then become the pozzolanic aggregate which was ground up and added to the lime to make the mortar hydraulic and closer to the 'Roman concrete' which had developed from the pozzolanic earth of Vesuvius.[101]

The masons worked these materials of the earth by hand with simple tools: the hoe for mixing the mortar, the trowel for spreading it, the hod for carrying bricks and the mortarium for passing the mixed mortar.[102] Thus Hagia Sophia's load bearing walls and four massive 'perforated' piers were built in layers or 'lifts' of stone about a metre high. Between layers of stone the masons set their layers of mortared red bricks, five high with carefully overlapped joints to develop the tensile capacity of these zones which bind the wall horizontally and distribute uneven settlement and other forces. Zone after zone, layer after layer, the masons worked up the wall to the top, in an intimate relationship with the earth from which they believed God had made the human being.

On large masonry buildings it is a necessary strategy to build off from previous work. As the masons built up these walls they would have literally used them, along with their lightweight ladders and scaffolds, to bring more materials and men higher up the building to work. The lower wall becomes the scaffolding from which to access the higher wall, the lower domes and vaults become a second ground level from which to build the higher arches and dome. This in itself could have become an anagogic meditation; a 'perfomative icon' of Dionysios' *apophatic* and *kataphatic mystagogia*.

Unlike their Roman predecessors whose wall structures were intended to

100. See Vickers, M. (1973) **'Fifth-Century Brickstamps from Thessaloniki'**, *The Annual of the British School at Athens*, Vol. 68, pp. 285-294, Athens: British School. 'Tafrali,1913,l52:'Nous avons trouve aussi cette meme marque sur quelques briques qui formaient un amas dans la cour de Sainte-Sophie.'Cf. Texier 1864, 145: *'In the pavement of the womens' gallery [of Saint Sophia] entirely composed of Byzantine brick, we find stamps like those which we mentioned as existing in the church of St. George [the Rotunda].'*

101. The 'seconds' on the exterior of a clamp or scove kiln have reached the temperatures required to lose their chemical water (480-700˚C), and passed the moment when the 'Quartz inversion' occurs at 573˚C, in which the quartz crystals change. They have begun to crystallize into a ceramic that will not melt in water like unburned clay, but they have not reached the higher temperatures of 600-800˚C needed to burn off the sooty carbonaceous matter from the firing. The durable bricks, towards the interior of the clamp, must reach above 800-900˚C and begin sintering, and must hold a temperature of at least 900˚C (unless fluxes are present) to create the harder bisque material for a good brick, but those which do not reach beyond about 600-700˚C are a perfect hydraulic additive for the lime mortar.

102. The mosaics in the 11th century Cathedral of Monreale and Capella Palatina in Palermo clearly show the masons' tools so clearly as to suggest a signifance for each one. (see Figs. 11 and 44)



FIG. 39 Above: View of East Facade with the main apses and their limestone and brick walling. The three windows are in the main apse behind the altar. The rough stone walling of the upper galleries and the cuboid dome base is thought to be from phase two of the rebuilding and later.

FIG. 40 Below: West facade with entrance doors and original limestone and brick walling.
Photos by author.



be covered over with facing materials, the Christian masons celebrated these contrasting levels by exposing the structural materials of the wall.[103] Ousterhout (1999, p. 226) has noted the 'constructional basis of Byzantine decoration' as an aesthetic that developed after the advent of Christianity.[104]

5.7.2 A discussion on walling methods and poetics.

Hagia Sophia's iconic white and red walling, combining limestone and brick, is 'the only example in Thessaloniki', Theocharidou (1988, p. 128) remarks, tracing it to earlier Transitional churches in Asia Minor and a few in Constantinople.[105] She notes that, 'Hagia Sophia breaks away from the prevailing local tradition in Thessaloniki with regard both to the materials used and to the general appearance of the masonry.' Though she credits its source to the capital which, 'strengthens the hypothesis that we are dealing here with a major imperial work ... (ibid. p. 129), this type of walling was already well established in the domed basilicas and cross-domed Transitional churches of Asia Minor. The design and possibly the masons may equally well have come from there. In those days, a 'major imperial work' involved a public show of symbols. If, as Cormack proposes, the church was built as the imperial project of Constantine VI and Eirene to consolidate their victory over the Sclaveniae, how then might they have connected the second city of the empire into the image of strong and unified empire, through a cathedral church?[106]

103. For example, they never sought to hide the fragmentary nature of their building materials and purposely absorbed a variety of spoleia from earlier temple buildings into the walls of their churches; were they celebrating the diversity of the Christian *oikoumene*, or affirming a continuity with tradition, or asserting the new over the old? Discussing how the zig-zag, interlocking pitched brick patterns on certain vaults are a product of the unsupported construction method, he writes that *'the similarity of these vaults with exposed, exterior decorative forms emphasizes the constructional basis of Byzantine architectural decoration' (*Ousterhout, 1999, p. 226). He notes that construction was celebrated as decoration; *'Still, the similarity of these vaults with exposed, exterior decorative forms emphasises the constructional basis of Byzantine architectural decoration, a theme that has been developed by Velenis.'* (ibid. p. 226).

104. The symbolism of this new aesthetic, in a civillization where the human being is 'created from earth' according to the book of Genesis, could be read as an analogy for Christian theology's concept of the 'person' as opposed to the ancient Greek dramatic mask and the Roman 'persona'. See Zizioulas (1985, pp. 31-36) for his chapter on 'Personhood and Being' in *Being as Communion: : Studies in Personhood and the Church*. London: Darton, Longman, and Todd

105. *"At the same time, the general appearance of the masonry of the first phase, the use of bands of limestone ashlars being, as we have seen, the only example in Thessaloniki, is purely Constantinoplitan in character. Random examples from Constantinople are the walls of Theodosius II (413), the studios basilica (453), the repairs to St. Eirene's (740), the north church of Lips Monastery (930), and the catholicon of the Chora Monastery (early twelfth century). Similar examples in Asia Minor churches are to be found in St. John's of Pelekete, the large Justinianic Church of St. John in Ephesos, and the church at Dereagzi."* (Theocharidou, 1988, pp. 128-129)

106. The grandfather of Constantine VI, Constantine V's prohibition on icons, as not being homo-ousion (the same substance) to the image, may have been in force at that time. Brubacker and Haldon think that the iconoclast emperor Constantine V had an extensive building programme along with his successful re-organisation of the empire, which had been weakened

One observes that Hagia Sophia's walls of cut white stones and red brick bands portray an image (*eikon*) using tangible materials (see Fig. 31). There was no stuctural reason to use white limestone, no tradition for it, it was costly and not a readily available, but it conveyed a message by being used in the visible parts of the church. Ousterhout (1999, p. 24) describes the phenomenon of an 'iconic architecture' being conveyed with painted ashlar blocks in Cappadocia,

> The church as an established and recognisable image was sanctified in the same way as the image of a saint on an icon. It is not simply coincidence that the controversies of the Iconoclast period resulted both in a theology of icons and a standard church type.[107]

During iconoclasm, when it was forbidden to portray meaning in figurative imagery, architecture was permitted to connect the 'material imagination' to cosmic topology and theology through all the senses. Tangible analogies of the mountain, of earthly solidity, of assembled units in a tight formation, remind the faithful that the *ekklisia* was founded on solidarity. Walls, as I have shown in Chapter 3, were associated by analogy with the Holy Mother. They brought the protecting presence of the *Theotokos* as *Nicopoeia* who was, 'doing battle against mortal enemies or against the ineffable powers of evil ... like a general dispatching her soldiers to the field' (Pentcheva, 2006, p. 94), through relics rather than iconography during the Transitional period.[108] The Akathist Hymn greets her by many epithets: 'Rejoice, heavenly ladder by which God came down; rejoice,

by the plague and attacks by the Muslim Arabs.

107. Ousterhout (1999, p. 24) remarks that *"In some churches, like the naïvely decorated Barbara church in Goreme (Cappadocia), the artist painted the vaults to look as if they were constructed of blocks of stone. In other words, the conservatism in architecture may be in part the result of the meanings associated with certain architectural forms. The church as an established and recognisable image was sanctified in the same way as the image of a saint on an icon. It is not simply coincidence that the controversies of the Iconoclast period resulted both in a theology of icons and a standard church type. ... although the forms were flexible, a certain sanctity was associated with them that exceeded their structural and functional roles. This may explain the consistency, if not the conservatism, in Byzantine planning. It also explains why, even in Cappadocia in central Turkey, where the churches were carved into the soft rock formations, this standard church type was often maintained. Being carved rather than built, a Cappadocian church could have taken on any form. Structural elements such as columns and beams were unnecessary for the stability of the church. But this was how the church was meant to be.'* I have noted this phenomenon myself in Cyprus in the Troodos mountains at the 11th century church of Asinou, on whose outer walls is a fragment of painted stucco showing neat ashlar blocks with pink mortar. The church is said to be 'emulating the wealthy Constantinopolitan churches', but is it not possible that the painted stucco is simply bringing out an iconic symbolism from within the grey mountain stones?

108. Her relics would have been processed along the walls of Thessaloniki while these words from the 6th century Akathist Hymn of St. Romanos the Melodist, were sung when the city was under siege from the Avars in 626 and again from the Sclaveniae in 676–678, not long before Hagia Sophia was built. Byzantine ritual symbolism associates the walls of the city and cathedral, with the Theotokos as 'aktamachetos' (unconquerable), in charge of a celestial army with 'command over the military saints' (Pentcheva, 2006, p. 82). She was classically depicted with Thessaloniki's Saint Demetrios or St. George, and the archangels Michael and Gabriel in military garb. (ibod. p. 94-95).

bridge leading those from earth to heaven.'[109] The iconic imagery of the forty martyrs (the 'living stones') and St. Peter (the rock, *petros*) as the foundations of the *ekklisia*, or the protecting *Theotokos* had to be conveyed by the construction methods and materials during iconoclasm.

As an exercise in translation between Byzantine iconic symbolism, ritual symbolism, and the masonry walls of the cathedral, delineating a *chora* is common to all. In Chapter 4 (pp. 212-213) on iconography, I referred to Eliade and Lidov's explanation of Jacob's dream of a ladder of ascent and descent as the making of sacred space, and how Isar (2009, p. 42) relates this to the *chora* of the church. The symbolic ladder of ascent and descent, has also been compared with Dionysios' method of apophatic 'ascent' (God is incomparable) and kataphatic 'descent' (God is incarnate). One cannot say if the master masons made a conscious connection with Jacob's ladder in their work. Suffice to say that a system of ascent and descent has been set forth by the theologians and art historians discussed in this thesis. If there were a masons' mystagogy there would likely have been an analogous system of ascent and descent.[110]

With or without a symbolic structure to their method, the masons worked on building the walls ascending and descending their ladder and scaffolding (see Fig. 44). It is heavy labour, lifting weight that engages their combined body and soul. Compared with the weight of repentance that fills the first part of the Liturgy of the Faithful, the mason physically feels this weight. His daily sacrifice must have seemed Promethean, becoming years of toil. Yet it was not his job to complain. His examples were Job and Christ himself. Perhaps he had memorised a few popular sayings of holy fathers, such as #131 of St. Mark to help open his way,

> The remembrance of God is suffering of the heart endured in a spirit of devotion. But he who forgets God becomes self-indulgent and insensitive.[111] (Philokalia 1, #131, p. 137)

109. *'Rejoice, heavenly ladder by which God came down; rejoice, bridge leading those from earth to heaven.'* (Akathist Hymn 2018, p. 42) 'Χαῖρε, κλῖμαξ ἐπουράνιε, δι' ἧς κατέβη ὁ Θεος. χαῖρε, γέφυρα μετάγουσα τούς ἐκ γῆς πρός οὐρανόν." (Στάσις A, verse 13) 'The Salutations to the Theotokos for the Fifth Friday of Lent' Translated by Fr. Nomikos Vaporis. Hymn Translations by N. Takis. [online] Available from: https://docplayer.gr/141631164-The-salutations-to-the-theotokos-for-the-fifth-friday-of-lent.html [Accessed on 24/05/2021]

110. Though not definitive, but lending a small measure of support to the comparison between the masons' work building walls and Jacob's ladder, is the iconographic series of 11th - 12th century mosaics in Palermo's Capella Palatina, and an identical series in the related Monreale Cathedral. In both locations the mosaics place the dream of Jacob's ladder in a sequence containing the masons building the tower of Babel with their ladder and scaffold in levels, and also the construction of Noah's ark with its ascending and descending ladder to the earth. Though the mosaics were made outside the Byzantine empire, under Norman occupation three centuries after Hagia Sophia was built in Thessaloniki, they were made by Byzantine artists/craftsmen and they exhibit an iconographic programme since the series is repeated twice.

111. *No Righteousness by Works* #131. Palmer, Sherrard, and Ware eds. (1979) *The Philokalia,*

To progress in his job and keep his sanity, the mason must gradually reduce the 'weight of his heart' while continuing to carry the heavy building materials.[112]

The walls that he is raising on the plain below Thessaloniki's citadel, towards the harbour, divide the sun into light and shadow (see Figs. 44, 47, 50). It is an act of creation reminiscent not only of Genesis 1:4 but also of the dichotomy between sympathy and antipathy in Foucault's similitudes.[113] The alternating pale and dark layers of the walls seem to notate this duality in their impenetrable mass of earthly matter. Hagia Sophia's bearing walls are 2-3 metres thick at the base, and the massive 'perforated' piers within the naos are three metres thick at least. These walls, combined with the massive foundations of up to 4.5 metres deep, represent an unimaginable amount of labour, whereby the masons were literally constructing a hollow mountain.[114] Yet the message of the wall itself is that it unites both light and shade, embodying a union of solar heat and cool shade in the humility and love of its earthen mass. Hopefully the mason's mystagogic journey in the next stages of the construction experience, will guide him to touch this union, and the earthen mass will become less impenetrable and heavy.[115]

5.7.3 Physical and cosmological stability, and Byzantine mortar

Within these lower walls the Master mason built the cosmological concept of the earthly realm as a square, or cubic space.[116] As I have shown in Chapter 4, the earthly square mirrored the four constellations of the equinoxes and solstices, representing earthly time.[117] At first one asks why the word cube (κύβον) is repeatedly used in Constantine of Rhodes' *ekphrasis*, for the formation of the *architekton* or Master mason's square of lines on the ground,

> '...having marked out the linear form of a cube ... The craftsman, having marked this cube and its cubed form on the surface of the ground ...'; '... κύβου χαράξας γραμμικὴν θεωρίαν ... τοῦτον χαράξας τόν κύβον ὁ τεχνίτης καὶ σχῆμα τοῦδε κυβικὸν πρός γῆς πέδον ...'; (In: James, 2012, p. 57)

Vol 1, London: Faber and Faber, p. 137)

112. See the masons' interviews in the Appendix and at the end of Chapter 3, for a description of this phenomenon in the work of the mason.

113. *'And God saw the light, that it was good: and God divided the light from the darkness.'* (Genesis 1:4, KJV)

114. See footnote #77 regarding for the foundation depth; Theocharidou (1994, p. 177) and Metzos (1981, p. 209-210) for further details.

115. There is an analogy here with the iconostasis, which is sometimes an impenerable barrier to the sacred space of the Mysterium, and at other times is open to the altar and seems as light as a thin veil.

116. See Ch. 4 Fig. 31 for Cosmas Indicopleustes' vaulted diagramme of the cosmos.

117. See Ch. 4 description of the *analipsis* icons, and the work of De Santillana and Duchend.

In fact, he is marking the lines that will stabilise the design in three dimensions, by setting the axes and their intersections, the dome and apse centres, and giving the lengths for the system of proportions that will later decide the height of the major features of the building (see Figs. 21 - 26).[118] Hagia Sophia's three dimensional cube has a centre on a level with the three windows in the walls supporting the main apse, which symbolise the mystery of the Trinity in *ekphrasis*;

> Furthermore, a single light shines in the choir through three open windows,
> Announcing the mystery of the Trinity, Father, Son and Holy Ghost.
> (Sougitha, In: Mango, 1972, pp. 58-59, v. 13)

Theologically, it was the Trinity that established stability on earth. According to Lossky (2005, p. 44),

> If the very foundation of created being is change, the transition from non-being to being, if the creature is contingent by nature, the Trinity is an absolute stability.'

The geometric corollary to this theological foundation may have been the proportional lines of triangulation within the cube of the *naos*.[119]

The square of perimeter walls curved around the base of three apses in the east. In the west the perimeter broke open for five narthex doors. Within the square were four massive piers of 6-7 metres wide, defining the crossing of the *chi-ro* and the inner square of the *naos*. These were perforated by arched openings sufficient for the passage of human beings (see Fig. 19) The masons raised all these walls within the skeleton of the old basilica, like a new earth emerging from the old, or a child being born of its mother. Parts of the old basilica which had survived stood beside the new walls, making the outer narthex and the entry court (see Figs. 16, 25, 26).[120]

The physical stability of the walls and four giant piers was always of great concern. In the *ekphrasis* of Constantine of Rhodes, we find multiple repetitions of the number four for the walls, piers, arches and vaults, which 'stood there in very secure formation, like generals and commanders of tagmata, having drawn

118. cf. Vitruvius' *firmitas*

119. *'May the sublime Trinity that has given strength to them that built this Temple, Guard us against all evil and deliver us from injury!'* (Sougitha, In: Mango, 1972, p. 59, v. 20)

120. In its place there was a Late Byzantine portico, which had been altered in the Ottoman period, and was demolished after 1912. This was not in exactly the same place as the basilican exo-narthex. Today, parts of the old basilica's walls are still visible at the base of the present narthex and around the building, especially to the north and east. Since the Master mason had separated the foundations of the new church from those of the basilica, it would be fair to assume that he also seperated the outer narthex from the new walls of the inner narthex with the equivalent of an 'expansion joint'.

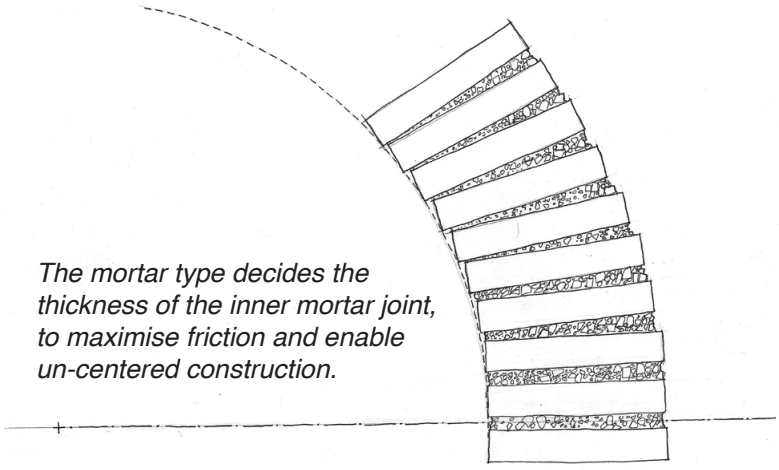


FIG. 41 Below: Sketch study of inclined bricks in an un-centered dome or pendentive showing a) friction factor between bricks may have helped during construction, and b) the detail of how the aggregate could control mortar settlement.
Drawing by author.

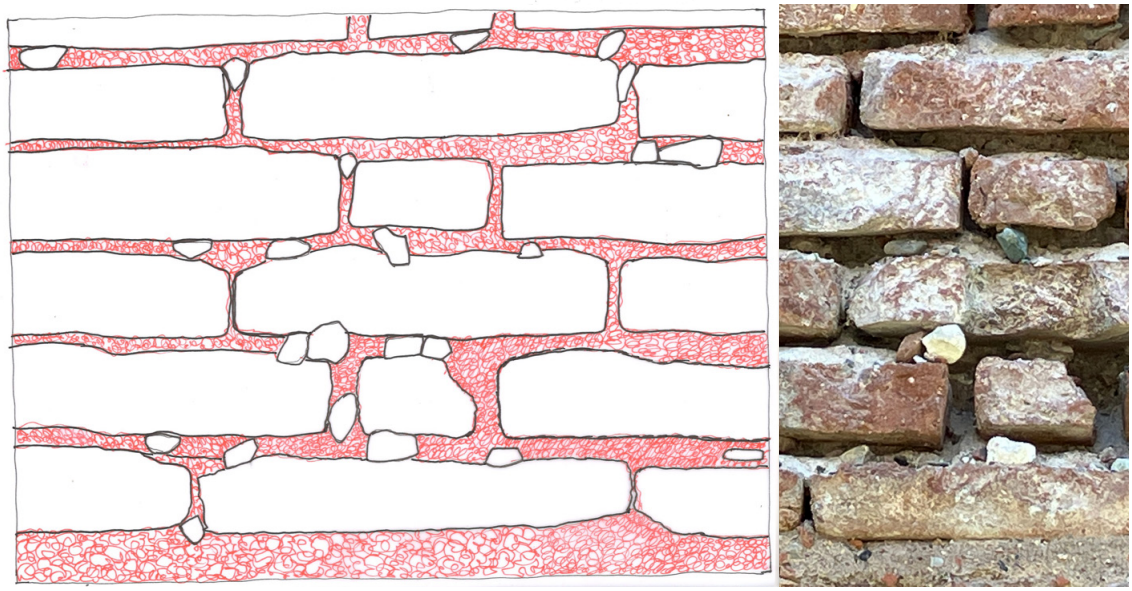
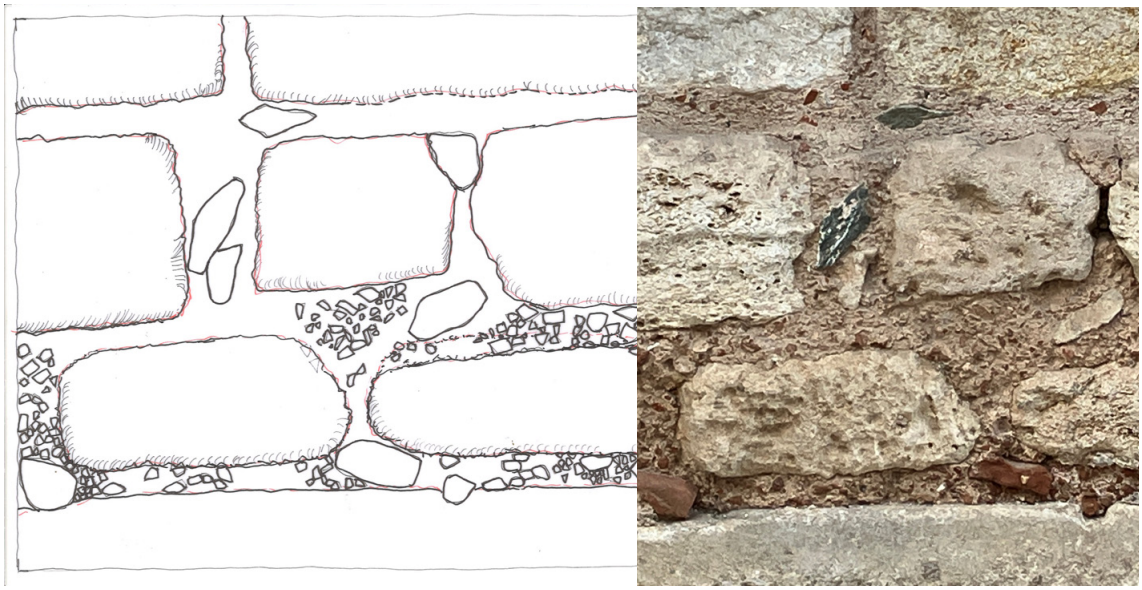


FIG. 42 Above: Detail of eroded portion of the exterior wall of the Rotonda. Where there was thick mortar of hydraulic lime with large aggregate, only the large stones have remained. The larger aggregate controls the minimum size of mortar joint and any downward settlement.

FIG. 43 Below: Detail of the base of the exterior wall of Hagia Sophia showing thick mortar layers made with hydraulic lime and pozzolanic crushed brick and brick dust. Large aggregate is visible between the limestone blocks. *Photos and drawings by author.*



up their phalanxes in the form of a cross' (In: James, 2012, p. 61).[121]

Whereas we usually think of the strength of a wall coming from its bricks or stones, Moropoulou's (1997, p. 120) research into rubble masonry walling implies that it is only as good as its mortar.[122] This is because 'the mortar composes the nucleus of a structural system' built around all the bricks, stones, and terracotta fragments.[123] She also characterises the mortar of Hagia Sophia in Constantinople as 'early examples of reinforced concrete' (ibid. 2002, p. 544).[124] The composition of Byzantine mortar is a unique evolution of construction practices in Greece and Asia minor where pozzolanic earths were not available to make the Roman concrete.[125] The mortar is composed of hydraulic or aerial lime from limestone burned with or without clay, combined with 'porous aggregates, physico-chemically active, like crushed brick' (ibid. p. 544), which have a pozzolanic effect.[126] If a modern mason were to recieve such a mortar from his

121. Possibly an allusion to the military saints or the four archangels sometimes depicted in military garb, and guarding the safety of the sacred space.

122. Referring to Hagia Sophia in Constantinople, Moropoulou states that, *'the monument's static and dynamic behavior depends very strongly on the mechanical and chemical properties of the mortar and bricks used in its masonry ... The hydraulic nature of mortars explains, not only why the building still stands, but also the very large static deformations they have undergone, since such mortars have a very long curing period.'* (2002, p. 543)

123. *'Rubble masonry mortars are distinct to the mortars of masonry joints due to the different construction techniques used and the prerequisites, concerning their behavior in the structure. In the joints, the mortar acts as the adhesive agent by connecting two different building stones. In the rubble masonry, the mortar composes the nucleus of a structural system built around (internal mortar), depending on the multivariable adhesion bonds, built up among mortar-building stone and mortar-aggregate fractals, which affect the strength properties of the system.'* (Moropoulou, 1996, p. 120)

124. *'According to the dynamic analysis, ... natural frequencies of the building ... these results show a decrease of approximately 5–10% ...due to the non-linear nature of the masonry, rather surprising at such low levels of acceleration, indicating a type of behavior that allows for the structure to absorb energy without effecting its material properties irreversibly, which is not encountered in most modern masonry or concrete structures.'* (Moropoulou, 2002, p. 544)
Regarding 'the structure's ability to withstand seismic loads w14x. More specifically, the ductility of the Hagia Sophia mortars is examined in relation to the physico-chemical bonds and formations developed at the crushed brick–lime interfaces.' (ibid. p. 545)

125. *'Recent material analysis of the mortar of Hagia Sophia, Constantinople shows that, "The mortar contains significant amount of brick dust and also large chunks of brick as coarse aggregate. Given the pozzolanic nature of brick dust, it is possible that the mortar is actually not a conventional carbonated lime material, but rather a proto-concrete.'* (Livingston, Stutzman, Mark, and Erdik, 2011)

126. *'The grain and fragments size of the crushed brick influences directly its hydraulic reactivity, as well as its physico-mechanical properties'.* (Moropoulou, 2002, p. 550)
'The penetration of lime into the ceramic and the consequent reaction transforms the microstructure of the ceramic by transforming the pore radii into smaller pores, and augmenting the apparent density.' (ibid. p. 550)
'Therefore, a real chemical interaction between lime, in the form of putty, and clay, which is given by the presences of the free oxygen valences saturated by Ca2q ions (Scheme 1), can be detected. The interaction is maximized in clays, which have been subjected to heat and converted to the greatest amount of amorphous Q3 layers (at 550 and 600 8C). This appears to be the structure with the greatest affinity with lime. The 5-month action of lime coverts the Q3





FIG. 44 Above: Duomo di Monreale, Sicily (12C), Mosaic of Masons constructing the Tower of Babel. Note the builders' ladder and scaffold. There is a 'radiant freize' line above the kosmitis (cornice) at the boundary of the lower level 'of the senses' and upper level 'of the nous' where the 'trinity' of windows admits light. The mason mixing mortar is working with an essential fluidity, whereas the mason shaping the stone is working with a solidity, dividing light and shade as a wall does when it rises above the plain. The masons are standing on top of arches or domes, to build up higher. Typical to icons, the architecture has become part of the image, and the image enters the space in which the observer stands.

Available from: https://01varvara.files.wordpress.com/2011/08/01-anonymous-building-the-tower-of-babel-duomo-di-monreale-monreale-sicily-it.jpg [Accessed: 24 March, 2018]

FIG. 45 Below: Layers of white ashlar stone and brick bands comprise the Hagia Sophia's exterior wall. Structural language is the image of the building.

Photo by Author.

apprentice, he would send him back to remix the mortar without the 'lumps'. But looking at the mortar Moropoulou's way one can see it as a nearly perfect combination of un-centered mud-brick vaulting practices, Roman concrete, and the vaulting innovations of Asia Minor.

Looking closer at the walls of Hagia Sophia, and of the Rotonda, one can find a few unpointed areas where the lime binder has washed out, due to damaging cement plaster having been put on the wall (see Figs. 42, 43). The detail reveals that when the mason set the brick or limestone block onto the bed of mortar, the largest aggregate dictated the minimum bed thickness. In other words, it propped the joint open. Combinations of smaller aggregates contacting each other within the lime binder also had a limiting effect on the bed thickness.[127] The aggregate controlled the plastic mortar flow in the short term and in the long term, and the mason could continue to work with the relatively slower setting time of the lime binder.[128] The terracotta aggregate was an improvement over stones because of its pozzolanic effect, its light weight, and its softness which, combined with the lime base 'explains the good performance of the historic composites in resisting earthquakes.' (Moropoulou, 2002, p. 550).[129]

The mortar innovates upon a principle used by masons building with mud-brick, whose clay mortar takes many days to stiffen and will settle over a period of years. Small pieces of broken brick, like large-sized aggregate, are strategically pushed into the mortar joints during construction to prop them open which enables the mason to continue building and prevents deformation of the vault or dome. The radical innovation of adapting the principle to Roman concrete, includes the aggregate into the Byzantine mortar mixture, and allows for a more durable and possibly faster method of construction. The mortars made it

layers into amorphous Q2 linear chains.' p. 550

127. In the case of the Rotonda, the larger aggregate is stony, and this seems to be less evident in later centuries. Hagia Sophia has predominantly terracotta aggregate, though some chips of limestone and the grey local stone can be seen.

128. By comparison, cement based mortar becomes firm and adheres well in less than an hour, and cement reaches its working strength at 7 days and its full strength at 28 days. Lime is much more variable; modern hydraulic lime takes about 24 hours to become similarly firm and adhere well, reaching its 'full strength' at 56 days. Aerial lime (not hydraulic) takes much longer and continues to harden for centuries. The crushed terracotta aggregate, burned to 500-600 celsius, can confer a very effective hydraulic quality to aerial lime if it is hydrated for days in warm weather. Thus even a fast-setting lime mortar would take 24 hours to become firm enough to avoid settlement and movement of succeeding rows of bricks and stone.

129. The fragmentation and seperation of ceramic units dissipates seismic shock waves in a micro-scale. *'However, transmission electron microscopy provides, for the first time, valuable information concerning the development of an amorphous C–S–H gel formation between the crystalline phases of the calcite and the dispersed ceramic fragments in a sheet structure, which, in some points, gives rise to quasi-crystalline phases. The presence of the gel phase considers a matrix formation of an advanced cement based composite, which allows for greater energy absorption...'* (Moropoulou, 2002, p. 550)

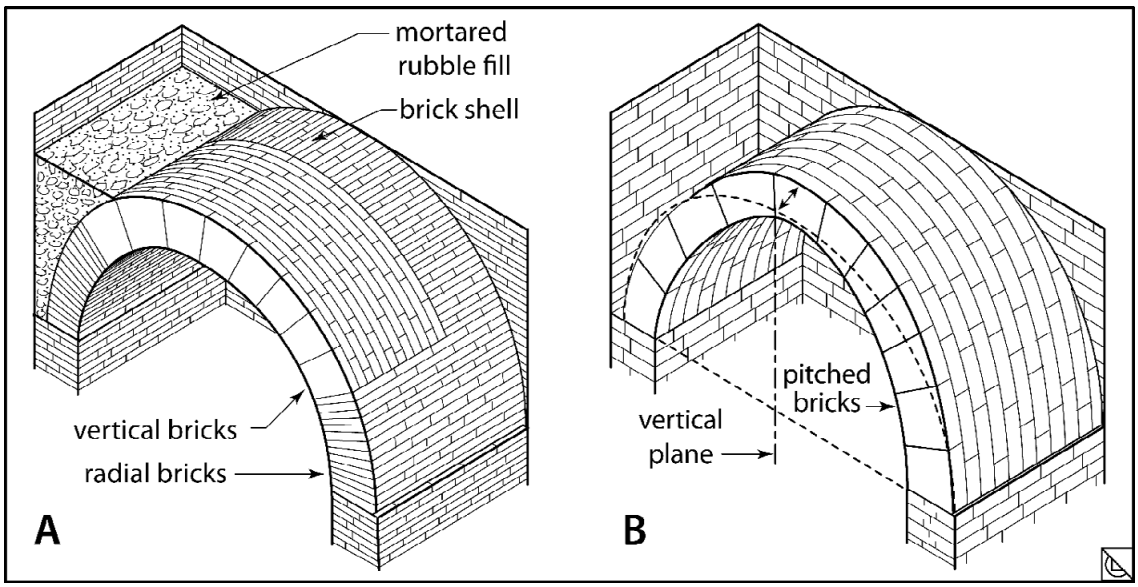


FIG. 56 Upper left: The triumphal arch of Galerius today after earthquakes and partial collapse, demonstrating how far the brick arc will cantilever without support. (cf. Karydis, 2012, pp.10-12) Photo by author.



FIG. 57 Middle left: The top of the Arch of Galerius, viewed from below, showing the method of constructing as final infill section. It is not known why the bricks were laid like this, but possible reasons are that the change of direction made the arch stronger, that it was lighter on the centering during construction, or that it continued the mud-brick patterns of bricks for unknown reasons. (cf. Lancaster, 2015, p. 40 ff.)
Photo by author.

FIG. 58 Below: Two methods found in late Roman and Byzantine barrel vaults which enable construction without centering: A) vertical brick arcs above haunches of brickwork radial to the centre B) vertical brick arcs pitched at an angle to the vertical.
Source: Lancaster (2015, p. 40)



possible to build brick domes and vaults because the larger brick aggregate in their thick mortars was sufficient to bridge between bricks and control shrinkage deformation.[130] Their pozzolanic lime mortar was highly porous and sticky making an immediate bond with the porous, large faced Byzantine bricks and helping them to stay in place during construction (see Figs. 37, 38 and 42, 43). It stays flexible enough to absorb the minute gradual movements which inevitably happen when a heavy masonry building settles down, and is water resistant.[131]

Based on Moropoulou's research, the masons may have slaked the lime immediately before construction, with the mortar being repeatedly hydrated in situ on the wall (see Fig. 11).[132] The curing of the lime binder was a longer term process that happened after construction, but the speed with which Byzantine churches are thought to have been erected suggests that this did not slow the masons' progress. Her research also shows that the exothermic reaction of lime would have increased the 'penetration of lime into the ceramic and the consequent reaction [that] transforms the microstructure of the ceramic by transforming the pore radii into smaller pores, and augmenting the apparent density' (2002, p. 550).[133] This 'interaction is maximized in clays, which have been subjected to heat and converted to the greatest amount of amorphous Q3 layers (at 550 and 600 °C)', such as the low-fired brick 'seconds' that result on the exterior layer of a clamp or a scove firing.[134] All these point to the benefits of having a lime kiln on site for a large project like Hagia Sophia.

130. The pozzolanic mortar mixtures analysed by Ulukaya et Al (2017) are highly porous, with low compressive strength, and aggregate sizes between 4-16mm.

131. Its particular property is being hydraulic (setting in water) and water-resistant after a few days of curing, yet soft and flexible like other lime mortars (not brittle like modern hydraulic lime or cement). The 13th century Byzantine baths of Thessaloniki are lined with a variant of this mixture.

132. *'The noticeable presence of portlandite, as compared to calcite, especially in the samples closer to the ground, proves that the energy offered by the watering of the in situ slaked lime activates the production of crystalline substances as well, in parallel with hydraulic products.'* (Moropoulou, 1997, p. 127) and *'The large and medium pore radii give evidence of the use of water in abundance for the in situ slaking of the lime. Hence, reduced water portion used for lime preparation is deduced. In situ slaking of lime, as an exothermic reaction, gives rise to relatively high temperatures (> 3OO"C), which in the high alkaline environment offer the energy required to activate reactions for the production either of hydraulic neoformations or of crystalline compounds, like portlandite.'* (1997,p. 128)

133. Moropoulou (1997, p. 125) suggests that, *'The formation of hydraulic components like CSH, CAH in a high alkaline environment requires energy consumption, which could be provided by the exothermic reactions, giving rise to relatively high temperatures (over 300'0, by the in situ slaking of lime. For montmorillonite clays such a possibility has been reported for low temperatures around 300°C. This is a temperature level possibly achieved when the lime is slaked in situ (calce calda).'*

134. See also Karydis (2011, p. 50) *'The slaking of such mortar probably took place right before it was used in construction'* - on the use of limestone burned with a high clay content which became hydraulic.



FIG. 46 Left: Annunciation illumination, Psalter and New Testament Ms. circa 1084, Dumbarton Oaks Collection, Washington, D.C. Photo Dumbarton Oaks. The radiant frieze is positioned at the horizon between the lower and upper worlds, and as the cornice on top of a wall which becomes a mountain.

FIG. 47 Below: 'Radiant friezes' at different levels, always at the top of a wall, reminiscent of the 'guttae' drops under the eaves of the ancient temples. The walls divide sun and shade as they rise up on Thessaloniki's alluvial plain, and the radiant frieze is a reiteration of this in a material icon. Photo by author.



5.7.4 Masons' Solidarity and Team Work: a horizon of the top of the walls.

In 8th century Byzantine culture, the 'earth' with which the masons were working daily was also seen as the sensory level of the cosmos, the primordial material which must open to accommodate the space of the *chora*.[135] In icons, we saw the epiphanic space of the *chora* as a cave within the earthly mountain, especially clear in the icon of the epiphany; it was also the plaza between two buildings sometimes covered with a ciborion, like the concept of a church building.[136] Just as the beholder of the icon is guided to look within and to remove his illusory sense of self as the source of shadow, through the path laid out by his teacher, elder (*geron*), or hierarch, so the mason, in his repetitive manual work, could have been guided to the path of virtues (divine names) under the Master mason.

The masons' work depends on not taking risks, on excellent team work, protecting and caring for each other. Dorotheos of Gaza wrote of neighbours traversing the 'space of radiations' that 'the closer they are to one another the closer they become to God' (Dorotheos, 1977, p. 139). His metaphors literally illustrate, 'we ought to bear one another burdens' and 'giving a hand with work and helping him.' (ibid. p. 138) From the Monreale mosaics we can see that masons worked in small groups as one body (see Fig. 44). Seven men are depicted, each one engaged in a task that supports the work of another; one to mix the mortar, another to carry the building materials, one to chip and shape the stone blocks, another to set them in place, and another to mortar them. The scaffold is fixed but one moves the ladder around to where it is needed by others. They work on top of the wall and on the ground and on the intermediate levels on top of the real arches of the building. The iconographer mixes the image of the icon and the tangible architecture, a metaphor for the unity of 'reality and imagination'.[137] His art proclaims the connection of the sensory world and the *nous* in one continuity; that we must not 'divide such an indivisible state of be-

135. Aristotle's characterisation of the primordial material as the *hyle* was not espoused by Plato or Plotinus. It was firmly redefined as the creation from God's own being by Philo, and then as the incarnation of Christ through God's own overflowing of loving generosity by the orthodox theologians of whom Dionysios and Maximos are my chosen examples.

136. Examples shown as icons in Chapter 4; the Epiphany and the Presentation of the Virgin at the Temple.

137. By this technique he gives us information about how the masons worked from staging platforms on top of the domes, vaults, and partially built walls, and he also declares that this tangible 'real' world should not be seen seperated from the 'world of ideas'. We have seen this technique through the previous chapter, with the inversion of perspective to bring the image into the room, with the inclusion of real sunlight into the illumination within the image, by the dialogue of architecture and image through the kosmites, the equation of windows with the apostles and saints, the image of water within the marble material itself.



FIG. 48 Above: Golden mosaic filled with light (within the mountain, the cave) over the bema with radiant mandorla and detail of the same photo. Photo by author.

FIG. 49 Below right: Detail of icon showing tops of mountains. Available from: https://i.pinimg.com/736x/ab/08/36/ab0836bab5d223619236b54624834856--byzantine-icons-byzantine-art.jpg [Accessed: 19 April 2018]

FIG. 50 Below left: South East exterior of Hagia Sophia in the image of the mountain, showing the 'radiant frieze' at the top of the walls beneath eaves at different levels. Photo by author.



ing so that we can anchor our lives in a more manageable harbour'.[138] He alerts us to a sense of the tangible world as a waking dream, one that the masons' may touch holistically in their anagogy.

The Byzantine world was familiar with a system of virtues and divine names through Dionysios that one can relate to the masons' team work. The connection between prudence, action, and virtue also formed part of Maximos' *Mystagogia* for the *ekklisia* in which his 'blessed old man',

> ... used to say in fact, that prudence is the potency of reason and that reason is prudence in potency. Also that action is habit, that virtue is act, and that faith is the inward and unchangeable concretization of prudence, action, and virtue (i.e. of potency, habit, and act). Its final term is the good where, ceasing its movement, the reason rests. (Maximos 1985, p. 193)

The masons' way of realising 'prudence, action, and virtue' involved 'to think, to dream matter', as Bachelard has told us. They must learn how the walls blocking the external light of the sun could be percieved as 'earth' infused with intrinsic light (their atomic energy spectrum). Maximos points out that,

> This is like another sort of Church not of human construction which is widely revealed in this church which is humanly made... (Maximos 1985, MT: II, p. 188)

The shift, or rather expansion, in perception from external reflected light to internal intrinsic light was notated by a horizontal level in the icons (see Fig. 46). This level was depicted as a horizon line extended between mountains, or the surface of the sea, the line between cave and mountain surface, or the horizontal line of a wall between the buildings that flank the space of action, and an analogy for this shift in perception is also embodied in the architecture.

In Hagia Sophia, the tops of the walls have an eaves line of patterned brickwork that Curcic (2012, p. 321) calls the 'radiant frieze' (see Figs. 47, 50).[139] This is an elegant way of creating a simple eaves with the materials at hand. The masons had already tasted the experience of completing level after level of white stones and red bricks. After this repeated effort and sacrifice imagine the joy they must have felt in reaching the major cornice line at the top of a wall. Would they not feel the cares dropping from their shoulders? This is the moment when

138. Khalili, (1995, p. 135)

139. Curcic (2012, p. 324) singled out the icon in FIG. 46 to illustrate his point. 'Here a single "radiant frieze" band may be understood as a capping of the wall' (ibid. p. 323). There is 'the central objective of communicating things immaterial and therefore invisible, by visual means" (ibid. p. 312) The economy of line in icons never includes anything that is not working to give their message. In Fig. 46, the top of the wall notates the transition from earthly to heavenly states, depicted with a radiant frieze. In architecture, the motif seems to have been adpoted as a motif for the eaves in the early Christian centuries. In the middle and late Byzantine periods the frieze began to appear all over the walls like an iconic reminder of the walls' essence.

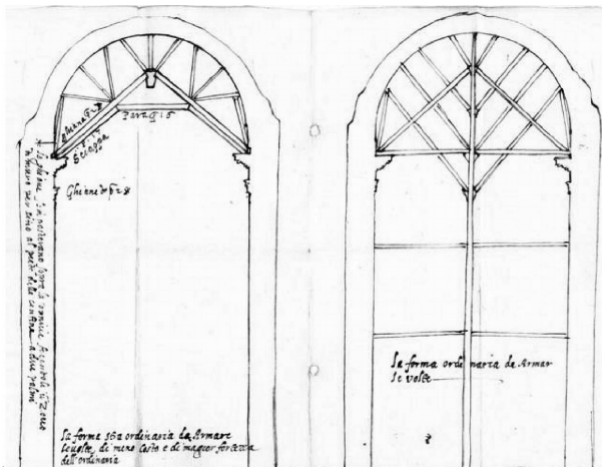
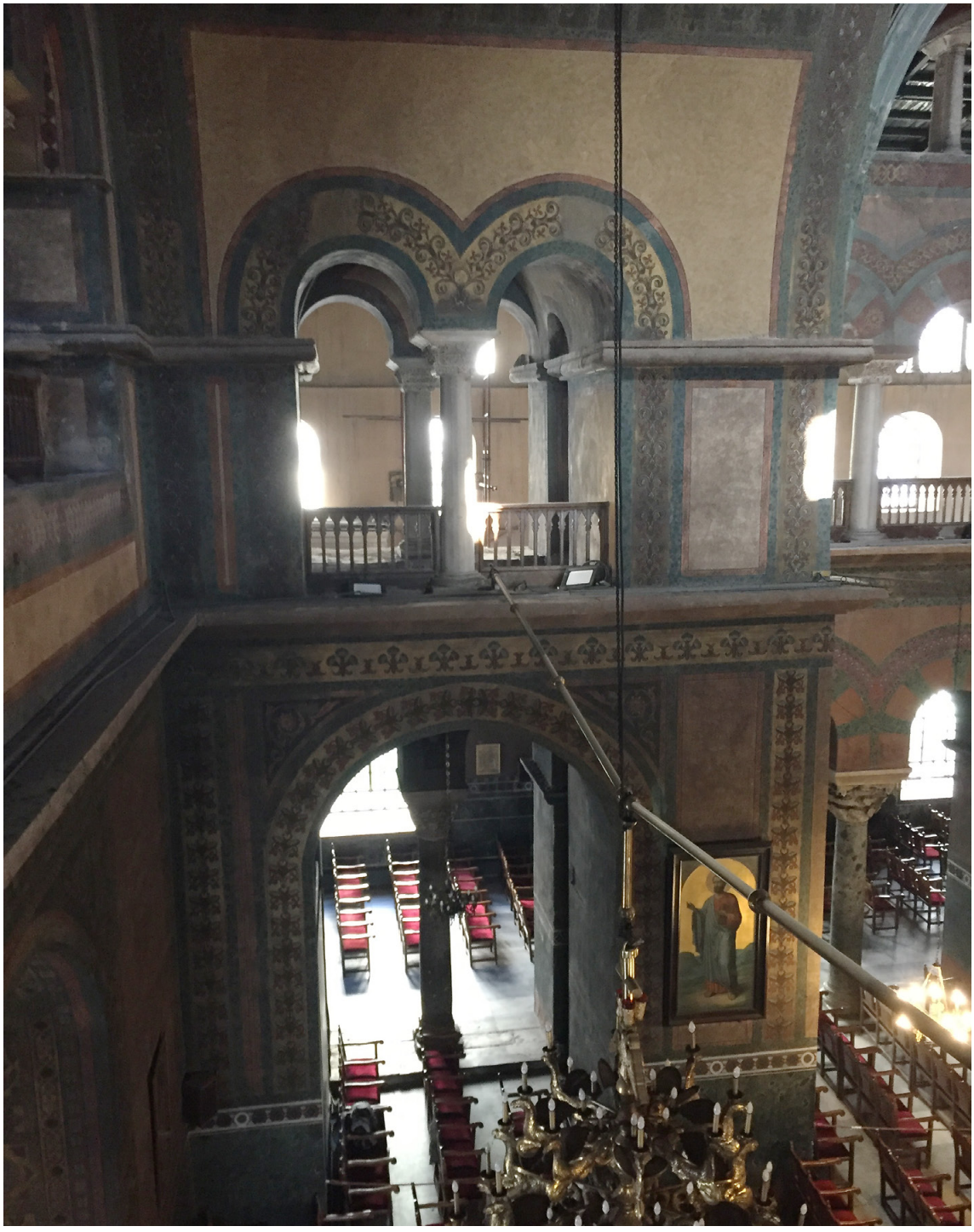


FIG. 51 Top Left: Two types of medieval formwork set on cornices (1560 AD, Italy)
Source: Drawing by G. Alessi; original drawing from S.A., p.n. 799–30.11.1560.

FIG. 52 Below: View of a massive 'perforated' pier with multiple smaller and larger arches, with associated cornices to support the centering. The light filters through layers of walls perforated by arched windows and doorways; the exterior wall, the screen walls and the massive pier. *Photo by author*



the bulk of the labour is done and the main mass of the materials has already been lifted and placed. They set the last layer of bricks at the top of the wall with an offset 45 degree angle to make a 'radiant frieze'.

Curcic (2012, pp. 307-337) compares this feature to the heavenly mandorla in Byzantine iconography, as the embodient of divine light, whose edges depict the symbolic horizon between the impenetrable sensory realm and that of the intuitive mind (*nous),* as found in the theology of Dionysios (see Fig. 48).[140] Just as the synaxis experiences a ritual analogy for this horizon at the moment of the 'great entrance' and the singing of the cherubimic hymn, this interpretation of the radiant frieze offers the masons an experiential contemplation (*theoria)* while building .[141] These bricks, set at a 45 degree rotation, have been liberated from their regimented order in the wall, to escape its massive, impenetrable materiality. The stylized mountains in Byzantine icons also terminate at their tops with chunky, cuboid shapes that are full of movement and seem to shimmer and dance (see Fig. 49).[142] The rugged and rocky effect, is sometimes so exaggerated in icons, that the mountain tops look like trembling fire, recalling mount Sinai in the book of Exodus, or the transfiguration of Christ on Mount Tabor.[143] For a mason, such a shift in perception might, in reality, happen at any time during his apprenticeship. Reality is always somewhat independent to its ritual enactment, which is an instructive analogy crafted in the realm of the five senses. Here, building the 'radiant frieze' cornice is analogous to reaching a shining staging post in their spiritual journey up the ladder.

Byzantine visual arts linked symbols to each other by association and tangible analogy, in the manner of Foucault's *convenientia.* It was as if the very act of moving from one link to the other along the chain of similarity, could indicate the Source by the direction of travel. Painted space was illuminated by physical sunlight to notate the idea of an intangible yet very real spiritually percieved space.[144] By the same process the sensory image of the 'radiant frieze' could be

140. He calls them 'three dimensional rainbows' (ibid. p. 315). See Ch. 2 for further description of Curcic's translation between the iconic mandorla and the architectural 'radiant freize'.

141. Archbishop Symeon too, as we have seen in Chapter 4, wrote of the cornice on the templon, 'the kosmitis denotes the union through love between the heavenly and the earthly' (In: Ouspensky 964, p. 195).

142. Verse 8 of the Sougitha compares the smaller arches joining the walls to the roof with such mountains (see Appendix) *'Other arches are set around like some outcrops of rock on the top of a mountain; It is on them, in them and by them that the entire roof is joined to the arches.'*

143. *'And the sight of the glory of the Lord was like devouring fire on the top of the mount in the eyes of the children of Israel'* (Exodus 24:17, King James Version); *'And mount Sinai was altogether on a smoke, because the Lord descended upon it in fire: and the smoke thereof ascended as the smoke of a furnace, and the whole mount quaked greatly.'* (Exodus 19:18 KJV)

144. To make a clear difference between the two lights, I can think in particular of an icon of St. Demetrius which shows the source of the Divine Ray hidden within a cloud which shines forth



FIG. 53 Above: Stone cornices where formwork could have been supported to make the small arches that perforate the four giant piers. Photo by author.

FIG. 54 Below left: Arches at the gallery level with stone cornices and ledges, useful for supporting formwork to construct a perfect semicircular arch. Photo by author.

FIG. 55 Below right: Arches on the ground floor level closest to the sanctuary. The 'back-end' towards the aisle and the arched passage within the massive piers have been built without formwork, whereas the 'front-end' facing the naos is a nice semi-circle indicating formwork. Photo by author.





illuminated by real human feelings, to notate the idea that a heavy stone wall is filled with the light of creation.[145] In this way we can say that the mason's work in building has a mystagogic method. Such levels were part of the masons' hands-on education and remained there as a mnemonic system for the visitors to the building. Thus far, while building the lower walls of Hagia Sophia, the mason has been learning the outer properties of his materials in the sensory realm.

5.7.5 The arch as principle and archetype

As the masons built up the massive walls of Hagia Sophia, at specific levels set by the *architekton's* geometry, and measured by their plumb line, they would have started to make arches, at first for the smaller doorways and windows on the lowest level and then for the trinity of windows in the apse wall, and the upper levels of the giant piers (see Fig. 53, 54). At the springing of these arches are outward projections of grey stone cornices known as *kosmites,* which would have been used to support temporary timber formwork over which the arch was built. A related series of putlog holes were usually made in the walls for temporary beams and scaffolding, however, in Hagia Sophia these have been covered up by the interior finishes and are only visible in the upper gallery and on the exterior. An important part of this phase of building the smaller arches would have been erecting the six interior colums of green Thessalian marble in order to build arches on top of them. Their bases sit on the marble slabs that they had set accurately above the foundations, to mark the future finished floor level.[146] This datum level was important in determining the height of the various elements, and for the level of fundamental lines like the *kosmites*.

The smaller arches within the walls and giant piers would have given apprentice masons the chance to observe the experienced masons and learn how an arch is the only way that bricks can span over space to form the place in which a human being can stand (see Figs. 52, 53, 54). An apprentice may not yet have integrated with certainty how a single arch of brick could support the load of the massive walls above, but the experience of setting the bricks over the formwork, and then striking the form, would have taught him how an arch

with radiant light. In the same sky there is an image of sun shining with smaller burst of radiant light. It is a reminder not to worship the sun as the source of divine light.

145. cf. Theocritoff (2008, p. 67) 'If our bodily eyes can see God as light, as Palamas maintains, then the spiritual potentiality of matter is nothing short of awesome; and God is present in creation in the strongest possible sense.' and 'Each created thing has its own reality, its own unique manner of reflecting God's glory; and yet he [Maximos] can say that "properly speaking, God is everything" - since there is no being apart from God.' (ibid. p. 66)

146. The masons may have left the space between the piers open for as long as possible for better access (cf Mainstone,1988, p. 191).





FIG. 59 Above: The north aisle of the church, under the barrel vaulting, looking towards the north door to the prothesis. The small arches right and left would have had formwork. Towards the naos, there are small cornices for support. The farthest 5.5 m of the radially constructed barrel vault must have had some centering, and the rest may have had some guiding framework, or scaffolding planks for the builders, using putlog holes, now hidden. There is no major cornice.
Photo by author.

FIG. 60 Left: Interior of narthex looking north, showing the secondary pendentive domes / sail vaults, supported on strainer arches. The brickwork is now stuccoed and painted in dark green and red marbelised paint from the restoration work of 1908-1910.
Photo by author.

stands by itself in gravity (see Fig. 51). Interestingly, the last arch of the series between the side aisles and the *naos* is built without formwork (see Fig. 55).[147] The four larger strainer arches which divide up the length of the narthex into five unequal bays would have been more challenging, requiring them to erect centering supported either from the floor level or by putlog holes in the walls that have now been covered up (see Figs. 59, 60).

By the 7-8th century entire churches were built with nothing but arches, and their derivatives of vaults, domes, and apses. Analysing Hagia Sophia's first two phases of construction it is evident that the arch's properties and statics were well understood by the Master masons and their workshops.[148] They used no trabeated openings at all, only arches (see Figs. 12, 13).[149]

Of particular interest to this thesis is the change that building with arches brings to the human person.[150] Each brick depending on the adjacent one followed the principles of hierarchy in philosophy and theology.[151] When the keystone or final brick completes an arch, it gives the mason a taste of the unitary structure of the universe, seeming to bring the force of unity to their fingertips from a dynamic, invisible source.

If we can draw a parallel with the liturgy, we are at the moment when the cherubimic hymn is sung, the weight of repentance has been acknowledged, and an awareness of the 'angelic' realm begins with supplications. If build-

147. Surely this last arch without formwork does not mean that the masons ran out of correctly sized formwork. Perhaps it was not convenient to craft a small form that fitted with the centering for this portion of radially laid barrel vault. Perhaps it might indicate a change of plan by the Master mason for good reasons such as a need to train his team in uncentered vaulting. This might explain the multiple techniques and vaulting types in the secondary vaulting. For example, Theocharidou (1988, p.39) observes, *'Two different methods of construction may be observed in the barrel vault over the north aisle: a section of 5.5 m long at the east end is built according to the classic method [radially laid bricks] ... while the rest of the structure as far as the transverse arch at the west wall is built according to the well-known Byzantine method for uncentered barrel vaults [inclined and pitched vertical arches bearing on a short section of radially laid bricks] ... The surviving height of the first phase in the outer walls allows us to posit three possibilities:'* and she goes on to enumerate the possibilites of prior collapse of one part or the other inconclusively since the outer walls up to the springlines of the vaults did not collapse.

148. In Hagia Sophia, Thessaloniki, the timber roofs over the exterior galleries are afterthoughts adding during later centuries as Theocharidou's 'third and fourth phases' of construction.

149. In this, the early Christians continued the techniques of Roman civic architecture yet this may have contained a conscious architectural preference connected to an evolving populist sense of the sacred. The theory that Christians initially adopted the arch in order to avoid association with the Greco-Roman temples of columns and beams is generally accepted among historians, such as Sir David Talbot-Rice, Andre Grabar, Alexander Von Millingen, Texier and Pullan, and Richard Kratheimer.

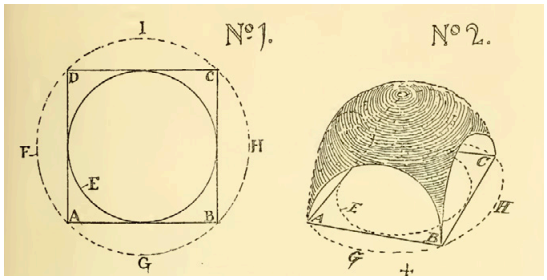
150. Ousterhout (1999, p. 201) writes that 'Byzantine masons would have been more concerned with the process of vault construction than with the principles of statics. ... In addition, construction practices after the transitional period may have had a direct effect on architectural design.'

151. See Chapter 4 (pp. 178-181) of this thesis.

FIG. 61 Top right: Section through the 5 narthex domes, viewing the exterior of one of the 4 great arches and the central dome.
Source: Theocharidou (1994).



FIG. 62 Mid-left: Analytic diagramme of the pendentives for a sail vault or pendentive dome.
Source: Jackson (1913, p. 39)



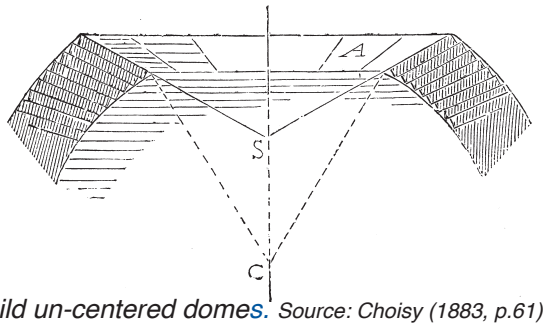


FIG. 63 Mid-right: Inclined brickwork method to build un-centered domes. Source: Choisy (1883, p.61)

FIG. 64 Bottom: Extrados of the north-west pendentive dome over the narthex. The head joints are small, indicating that adjacent bricks are touching on the intrados. The bedding joints are also not so large, also indicating that the bricks will be close to touching at the intrados. Some head joints are filled with a small piece of brick, Photo by author.



ing the heavy the foundations and bearing walls was the masons' repentance, now the arch's harmonious relationship with gravity can guide the masons to smoothly connect to the unseen, yet physical world, that he may begin to percieve beyond his five senses, in the *nous* (the intuitive mind).[152] The arch makes a subliminal suggestion of a smooth and logical transition from sensory impressions to an awareness of the *nous* and of a realm of divine archetypes. Day after day the masons, handling multiple bricks and stones, experienced a unifying principle within the arch, as a self-supporting structure within gravity. Such a unity of material and form, as if God was guiding the materials in their hands to make arches, may have helped the mason to experience the new religious principles through the practical activity of construction.[153] In their hands it became a tangible analogy for the promise of divine unity within the diverse multiplicity of the Roman empire.

5.7.6 Derivatives of the arch: multiple vaults, apses, and domes

During the construction of Hagia Sophia the masons developed the arch as a theme, like a musician develops from one note to make a fugue. Using a single brick repetitively they could span over space with arches, domes, vaults and apses, connecting distant walls and making them structurally stable. They repeated this instructive experience with every door, window, apse, squinch, pendentive, vault, and dome, learning the habit of stretching beyond their five outer senses and trusting their intuition about the arch's integrity.

After constructing the foundations and walls, four massive piers and marble columns, the masons would have arrived at the springing of the peripheral secondary vaults, domes, and apses, on four sides of the central square *naos*. These comprise two long aisles to the north and south, a narthex to the west, and the mysterium (sanctuary) to the east. To roof over these spaces, the *architekton* (Master mason) had an opportunity to train the apprentices as well as to test the seasoned masons. Here, the knowledge of a simple arch extends into a whole

152.See Chapter 3, Master mason Tarnanas' story of his teenage rebellion that was quelled by his apprenticeship and his path to a sense of peace and unity.

153. The arch gave the Christians a method to transform the Platonic symbolism of the cave from the place of illusion, into the place of learning and discrimination. The same interior, where a person stands, could ultimately be where the divine presence is recognised. For example, let us apply the principles of Dionysios' Mystagogia to the arch: We can say that within the sensory, tangible arch of bricks is reflected the arc of its prototype, the rainbow. Within the full light spectrum of the rainbow is reflected the divine name of Unity in the *nous*. Abstracting further from the archetype of the divine name is the reflection of its ineffable and incomparable source, and within the ineffable is the unmanifest God. Though this explanation is quite simplistic it shows a progression using analogy, from the sensory realm, to that of the *nous*, to being 'beyond words' in God. This alternative reading of why the arch was adopted, allows that the Christians specifically chose the arch principle to make the space of the *ekklisia*.



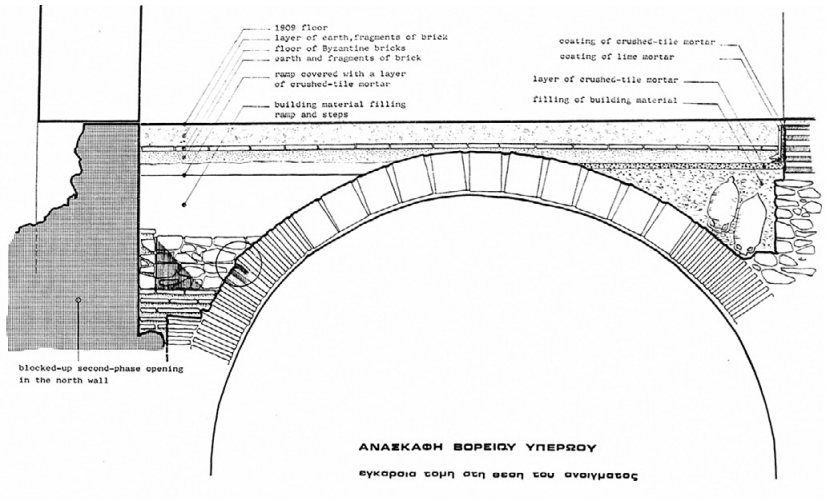


FIG. 65 Above: North upper gallery on top of the vault. Lightweight pottery amphorae filled the space between the vault and the gallery floor, most of which are in the Byzantine museum of Thessaloniki.
Photo by author.

FIG. 66 Middle left: Section of the north upper gallery barrel vaulting, built without centering and showing the brickwork; radial at the base, then vertical and inclined at the crown.
Source: Theocharidou (1988, Fig. 11 p. 39)

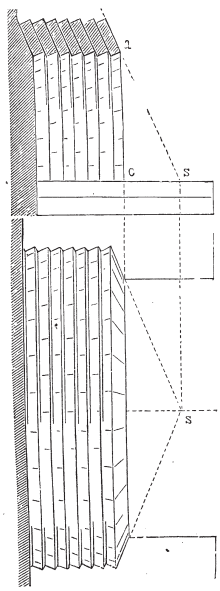


Fig. 34.

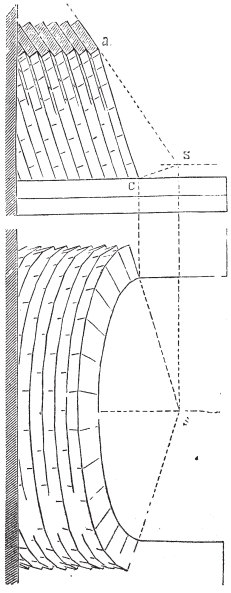


Fig 35.

FIG. 67 Lower left: Two methods are found in the uncentered barrel vaults of Hagia Sophia. The mason inclines each brick within a vertical arch (Choisy Fig 34), and the mason builds each arch pitched at a slight angle (Choisy Fig. 35).
Source: Choisy (1883, p.31)

vocabulary of smaller domes, vaults, and apses (see Fig. 12). The apprentices would be able to watch the Master masons repeating pitched brick arches back-to-back to make a barrel vault, raising up arches from horizontal to vertical to make an apse, rotating them around to make a dome. The further that any mason progressed up a building, the more his skills improved and the more his awareness would expand towards integrity, focus, and *anenergesia*.

At this stage it would have been necessary to span between the perimeter walls and the inner walls of the *naos* to stabilize the vertical walls from seismically generated horizontal live-loads. These form a buttress zone around the heavy dome at the centre to contain any residual thrust not taken up by the piers and broad arches (vaults). Once these secondary vaults, domes and apses are completed the masons will have an upper level staging platform from which to build up higher. The interest in building methods which do not need supporting formwork (centering) grew between the late Roman period and the Christian centuries of the Transitional period.[154] Of its many advantages, including being an available resource to those without timber, the training in uncentered vaulting increases the mason's body-mind awareness of gravity. He is a wiser and safer builder because his structure must stand firmly with every brick that he sets.[155]

The secondary domes and vaults of Hagia Sophia were built with inclined brickwork methods, possibly by different teams of the masons.[156] According to Theocharidou (1988, pp. 35-45) what remains of the work of the first team of masons are: the eastern apses, and probably the barrel vaults over the north and south aisles, possibly including a short section of 5.5 m at the north-east end built with radial bricks; the pendentive dome on the north-west bay of the esonarthex, which is divided into five bays by strainer arches; and the two penden-

154. Gregory of Nyssa's letter that we saw previously in Ch. 2 not only asks for masons but specifically requests, *'Please take especial care that some of them should be expert in uncentered vaulting, for I have been informed that this is more stable than the kind that rests on supports. The scarcity of wood leads us to the idea of roofing the entire building with masonry because no roofing timber is available in these parts.'* (Nyssa, Epist. XV, In: Mango, 1972, p. 28)

155. The builder of uncentered masonry will never strike the formwork and experience a sudden structural failure. The main enemy of domes and vaulting is 'plastic mortar flow', a gradual creep and settlement that can happen, during construction and afterwards, when successive layers of heavy bricks are added to mortar that has not yet stiffened sufficiently to reach the required compressive strength. One of the benefits of the large aggregate mortar must have been to control this plastic flow. The other enemy is not achieving a uniform shape. The builder of uncentered domes and vaults must avoid both these problems with every brick that he sets.

156. These are referred to as 'uncentered vaulting', 'inclined brickwork', or 'leaning arches' by textual sources. This thesis will follow Lancaster's 'inclined brickwork' terminology for arcs '*that are set at an angle as **pitched** and those that are not as **vertical** to reflect the difference between the two types.'* (2015, p. 42) So there is vertical inclined brickwork and pitched inclined brickwork.

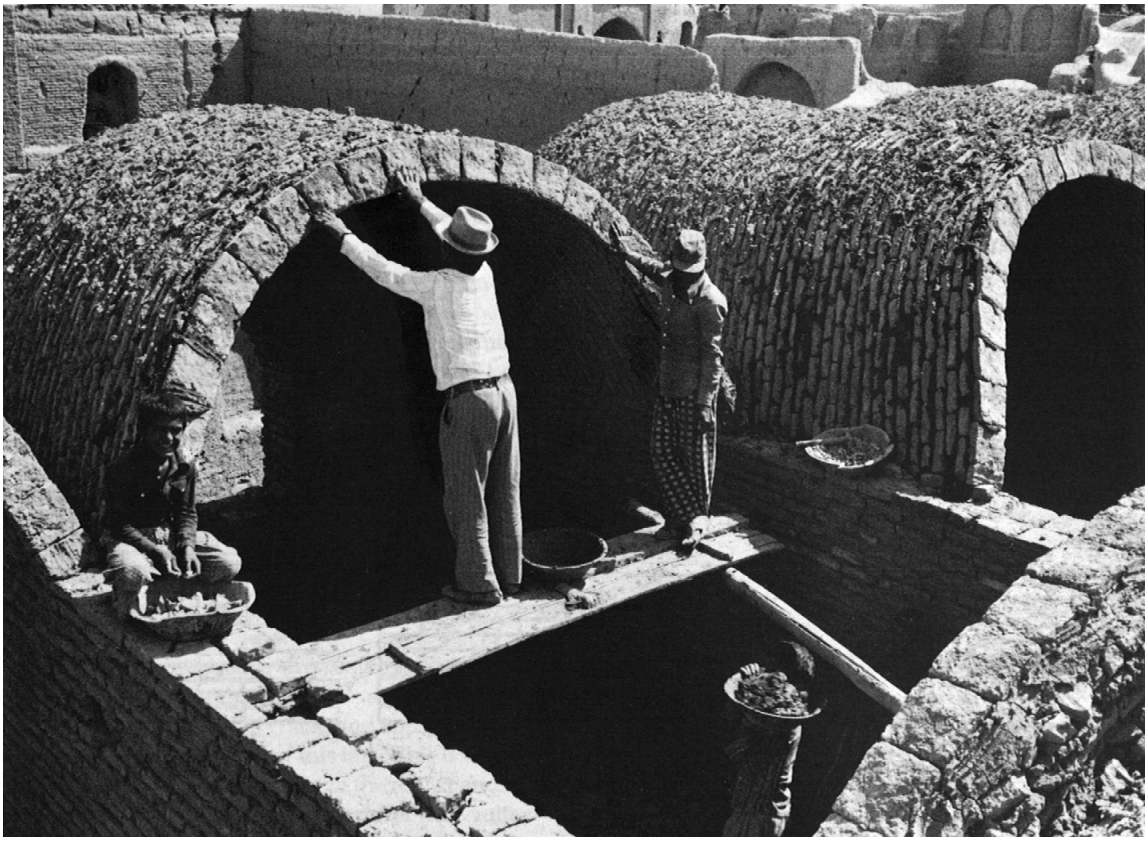
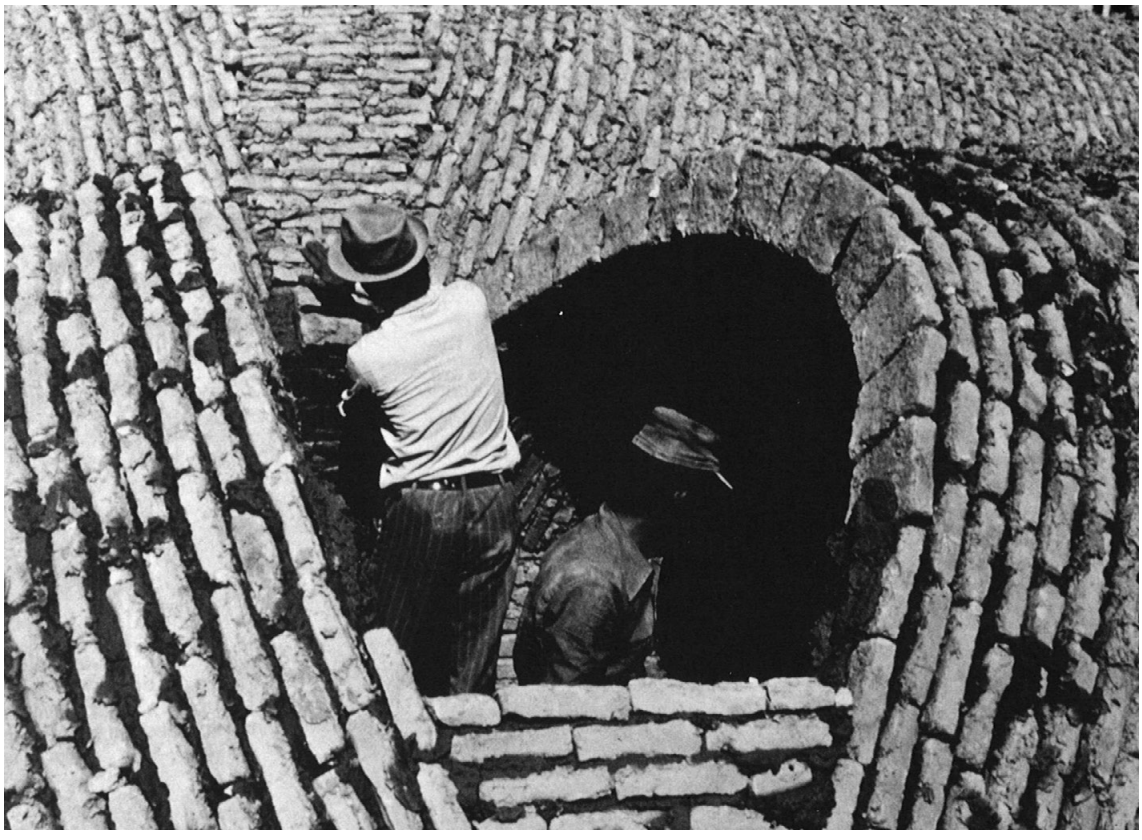


FIG. 68 Above: Iranian Masons building uncentered vaults with the traditional methods. The mason's compass is the length of his arms. The two boys have baskets of brick chips to hand to the masons who insert as needed into the larger mortar joints while they build.

FIG. 69 Below: 20th century Iranian masons close a mud brick vault from two ends, with the traditional method. The principle of brickwork is like that of the barrel vaults in Hagia Sophia. Figs. 68 and 69, Source: Khalili 1996, pp. 124-125



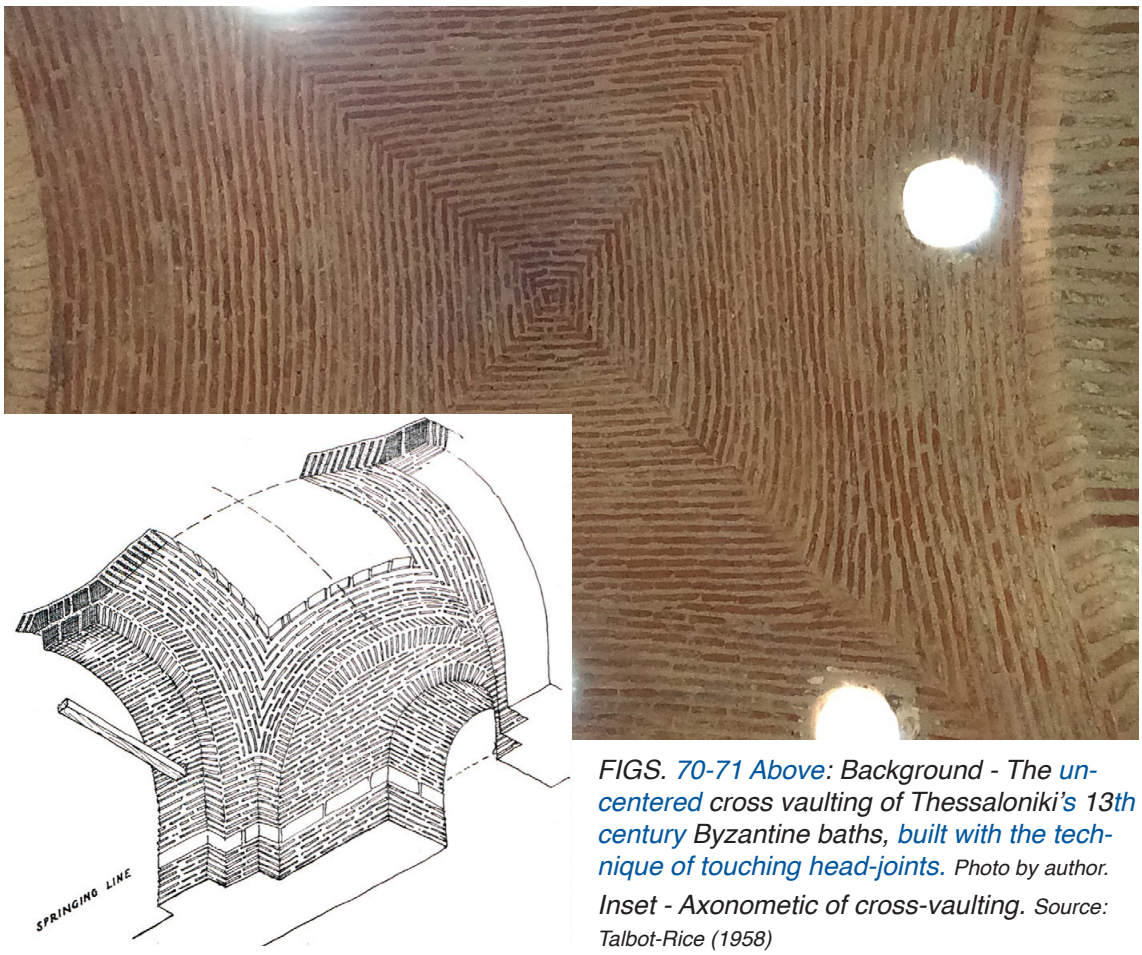
tive domes on the parembata of the tripartite sanctuary. She points out that the original springing of the barrel vaults and narthex domes along the interior and exterior walls is undamaged, and the exterior walls up to the springing are from the first phase and not damaged or out of plumb.[157] She proposes that the second team rebuilt the sail vault over the central bay of the eso-narthex, as well as the two elliptical sail vaults on either side, and the groin vault over the fifth bay, to the south-west.[158]

The masons have built the secondary vaults and domes without centering, except for the 5.5 m of radial vaulting (see Figs. 12 and 65-69). There are no cornices under the barrel vaults, though there may be putlog holes under the plaster of the outer walls which may have enabled some formwork-saving centering or guidelines, and scaffolding (see Fig. 59). The arches over the six columns of green Thessalian marble would have needed formwork supported on the short pieces of cornice, but the small arches of similar size near to the sanctuary were clearly built without it; the difference can be seen in the precision of their shape (see Fig. 55). The style of construction throughout the secondary domes and vaults has a fluid, less precise geometry than the four broad arches and vaults higher up the building. There was a certain limited amount of plastic mortar flow during construction that is evident in the tops of the cross vault and sail vaults, but the masons have handled their materials well.

Irrespective of their timing, the construction methods used for the secondary domes and vaults are those of the Christian east, the Byzantine empire, and give us a good idea of the experience of the masons while building. Over Hagia Sophia's side aisles the masons built 'pitched brick barrel vaults which took advantage of the well established system of building up the haunches using radial

157. She gives these as reasons why the barrel vaults should be considered in the first phase but does not come to any firm conclusion. She offers three options for the north barrel vault that has the small portion built with radial brickwork: *'a) that the first phase barrel-vault was preserved and subsequently supplementary work [continuing to build these walls upwards] was carried out only on the outer walls; b) that the upper part of the section constructed in widthways bands [vertical brick] was rebuilt; c) that the section at the east end was originally constructed, like the rest of the vault, with widthways bands of brick, and its upper part was subsequently rebuilt according to the classic method [radial brick] with the use of partial [formwork-saving] centring.'* (Theocharidou, 1988, p.39). A fourth solution, which I offer, may be that building the vaults with centering was turning out to be slower and costlier than building without, whereupon the *architekton* instructed a change of technique, since the barrel vault spans are manageable at 5.55 m, and the pendentive domes easily buildable at 5.75 m without centering, and this was not a new technique by the end of the 8th century.

158. A visual appraisal of the top of the uncentered domes and vaults suggests they are all by the same hands, except perhaps for the 5.5 m section of barrel vaulting, yet the evidence does not suggest the collapse of all the secondary vaults and domes. Therefore a change of technique may reflect some other needs such as cost, timing, or training of a masons team. They may or may not have built the vertical brickwork of the barrel vaults but not the radial bricks of their lower portion.



FIGS. 70-71 Above: Background - The uncentered cross vaulting of Thessaloniki's 13th century Byzantine baths, built with the technique of touching head-joints. Photo by author.
Inset - Axonometic of cross-vaulting. Source: Talbot-Rice (1958)

FIGS. 72-73 Below: Background image - Byzantine cross-vault detail with touching head joints. Note certain large pieces aggregate filling the width of the mortar bed. Photo by author.
Inset - Modern mason puts in the last bricks of a cross-vaulted dome. Photo, Alfonso Castaneda.



bricks and only turning to vertical brick construction for the crown of the vault' (Theocharidou, 1988, p. 39). On the south barrel vault, the masons started at the two end walls (espar walls) setting the first bricks against the wall at an angle. After several rows one pitched arch of vertical brickwork was completed. The masons then repeated the next arch on the first, and so on for the entire length. The pitch was slight and where the two ends meet, radial bricks alternate with inclined rows, stitching the two sides together, as it were. In the north vault, as mentioned, the bricks are radial for the first 5.5 lineal metres and the precise curve is the product of formwork. The rest of the barrel vault is built with inclined brickwork and a close examination shows that in some areas, the masons use inclined bricks within an almost vertical arc (see Figs. 40, 41).

Theocharidou's section drawings of the vault show the change in the orientation of brickwork within the vault (see Fig. 66). Since the vaults are 5.55 metres wide, the mason would have built the lower portion on both sides standing at a lower position, then after moving his scaffold planking up, he could have built the middle portion using his own arm's reach to measure the curve (see Fig. 68, 69).[159] The masons have freely used their repertoire of brick inclinations and arching methods with experienced judgement, within the tradition of inclined brickwork methods, to mantain the curving line of the vaults (see Figs. 67, 68, 69).[160] Under the guiding hand of the Master mason, the secondary vaults and domes could have provided ample opportunity for apprentices to learn by doing, in preparation for building the much larger 'broad' arches and vaults up above.

The pendentive dome, sail vaults, and cross-vaulting of the narthex are also built with uncentered inclined brickwork (see Figs. 70-78). A close examination of the extrados of these vaults and dome reveals some clues about the mortar. The bed joint is thick but the head joint is much reduced. Sometimes the brick headers almost touch, which means that at the intrados they would be touch-

159. Architect Nader Khalili used to say that the experienced old masons in Iran, his home country, who were trained before modern concrete architecture became commonplace, knew how to build a mud-brick dome or vault using only the span of their arms as their compass. He built whole houses and a school with such masons, who required only a bucket of water and a small wooden form to make the mud-bricks, and a trowel and a wooden plank to stand on, to build the entire building.

160. The narthex is roofed with five dissimilar domes of roughly 6-7 metres in diameter, corresponding with five original entrances on the west facade plus one on the north and one on the south. A flattened sail vault in the centre is flanked by two elliptical domes, with a pendentive dome to the north and a cross-vault to the south. The variety of techniques used to build five similarly sized domes over the narthex is partly explained by Theocharidou (1988, p. 20) who suggests there were difficulties of 'fitting in' with the pre-existing basilica. The masons had to connect the narthex with the remains of the old basilica which became the outer narthex; it may have been difficult to get the upper floor levels to match; they had to make an expansion joint between the inner and outer narthex.





FIGS. 74-75 Above: Sail vaults (pendentive domes) over the eso-narthex. Note the slight deformation due to plastic mortar flow before it has set. Photo by author.

Inset: diagramme of sail vault (or pendentive dome).

Source: Lancaster (2015, p. 72)

FIGS. 76 Below: The eso-narthex vaults showing the arched entrance to the church mid-way, and the additional bricks buttressing the lower half of the extrados. Note: the flatter inclination of the bricks can be discerned in the foreground.

Photo by author.

ing (see Fig. 41).[161] From this we can deduce that the masons may have used a technique well-known in uncentered vaults of unfired bricks: the brick faces get buttered but the head joint does not, because it must contact and overlap the adjacent brick by a millimeter or two. For example, the brick that has already adhered with the stickiness of the lime mortar, gives just an edge of support to the brick being set on the arc, head to head. The head joint gets its mortar by the general flow of mortar in the action of setting the brick, and with adhesion of the next row of bricks (see Figs. 68, 69).[162] In some areas of the extrados of the pendentive dome and sail vaults, the inclination of the bricks is just visible on their outer edges. If we extrapolate the face of the bricks into the masonry shell, they would be also be quite close to touching at the intrados.[163]

The secondary vaulting and dome are formally lacking in crisp precision, but are elegantly soft and flexible-looking. They show that the builder was not restrained and followed the arc of his arms' reach. His hands produced a free-flowing motion, frozen in time in his brickwork (see Figs. 64, 74, 76). Such technique, instilled through ancestral practice, signals an ancient line of masons who allowed gravity, and not their own ego, to create the forms.[164] These methods and their disciplines were ancient and were a part of the masons' initiation and learning, his *mystagogia*.

The relationship of the perimeter zone with the centre of the church can be seen as an analogy for the theological relationship between the centre and the perimeter. As I have described in Chapter 4, this geometric figure moves in and out of focus during the liturgy, when the sacraments are processed around the *naos*, when the priest censes, and after the *anafora* when he brings the communion bread and wine into the *naos*. Dionysios and Maximos describe this geometry of perimeter and centre as the relationship between God and creation. The diverse multiplicity of the peripheral narthex domes, vaulted aisles, and sanctuary apses have been generated by a single brick set in different angles. If we take this as an analogy for the 'far distant shores' of creation, we must find the centre somewhere above the omphalos and below the dome. According to

161. In other parts of the building we see very large joints between the radial bricks, around door and window arches for example, but often small head joints..

162. The technique is traditional practice in mud-brick construction, however, reducing the inside edge of the head-joint is also practiced by modern masons using lime mortar (wihout large aggregate). Figs. 70, 72, 77, 78, show examples of small head joints using Byzantine mortar.

163. This indicates that the masons may have used another technique used in traditional mud-brick construction, that is to spread the mortar on the upper half of the previous course, allowing only what is required to 'squish down' into the lower joint when the brick is set.

164. Certain groups still continue these techniques, as if unchanged since that time. In the east the mud-brick tradition of masons of greater Iran (Babylonia) was still flourishing until the late 20th century modernisation. In the west such brickwork continues today among Spanish (Catalan) masons, as well as related lineages in Mexico and Egypt.





FIG. 77 Above: Intrados of a sail vault (also known as a pendentive dome) in the 13th century Byzantine baths, Thessaloniki. Note the touching heads joints and the thin mortar beds on the intrados.
Photo by author.

FIG. 78 Left: Detail of the top of one of the narthex domes (sail vault / pendentive dome) of Hagia Sophia, Thessaloniki. The masons clearly built with inclined bricks. Note: the brick inclination is flattened, and the head joints are small. The bed joints are large on the extrados but this does not necessarily mean that the bricks are not close to touching at the intrados. Photo by author.

Macarius of Egypt's (300-391) sayings in the *Philokalia*, the centre of the human being is the heart, where the Holy Spirit resides,

> Thus it is possible to taste in Christianity the grace of God: Taste and see that the Lord is sweet (Ps 34:9). This tasting is the dynamic power of the Spirit manifesting itself with full certitude in the heart ... In fact, the heart is master and king of the whole bodily organism, and when grace takes possession of the pasture-land of the heart, it takes over all its members and all its thoughts; for it is in the heart that intelligence dwells, and there dwell all the soul's thoughts; it finds all its good in the heart. That is why grace penetrates all the members of the body. (Hom. XV , 20; PG 34, 589 AB)

Within the peripheral areas, the *architekton* has designed the interior bearing walls as four massive 'perforated' piers, with passages through into the *naos* (see Figs. 12, 26). Four columns around the *naos* have wind-swept Corinthian (or palm leaf) capitals.[165] These are carved like giant leaves blowing in a strong wind, but also resemble flames, as a reminder of the descent of the Holy Spirit moving in the heart of the people.[166] Structurally, these peripheral vaults and domes are literally 'guarding the heart' of the *naos* and protecting the central dome from collapse (see Figs. 79, 80). They are oriented towards the centre like the masons, who must first build them well before progressing inwards and upwards towards the dome.

5.7.7 Four 'broad arches', rainbows of light

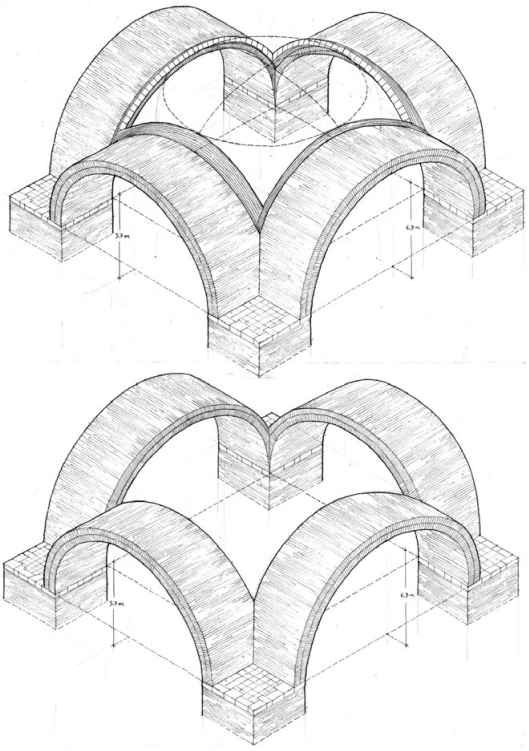
At 2.5 metres above the crown of the peripheral vaulting, the masons of Hagia Sophia reached the springline of the four 'broad arches' that curve above the upper galleries (see Figs. 57, 58).[167] In keeping with the iconographic visual hierarchies that I have detailed in the last chapter, the Sougitha describes four 'broad arches' supporting the central dome of Hagia Sophia in Edessa,

> The splendor of its broad arches-they portray the four ends of the earth.
> They resemble also by the variety of their colors the glorious rainbow. (In: McVey, 1983, p.95)

165. See Chapter 4 (Fig. 9, p. 111, and Fig. 29, p. 139). Though some of the internal columns were badly damaged in the fire of 1890, with inadequate restoration, it is still possible to see a relationship between the columns. They are not identical, but give the impression that a strong wind is moving within the *naos*. One can't help but look up into the dome with its fresco of the ascension (*analipsis*) and remember the wind with tongues of fire that descended at Pentecost into the twelve apostles who are shown in the mosaics around the dome. This form of wind-swept columns were a particular feature of several Byzantine church interiors, including Thessaloniki's own Hagios Demetrios, and San Marco in Venice.

166. *'And suddenly there came a sound from heaven as of a rushing mighty wind, and it filled all the house where they were sitting. And there appeared unto them cloven tongues like as of fire, and it sat upon each of them. And they were all filled with the Holy Ghost, and began to speak with other tongues, as the Spirit gave them utterance.'* (Acts 2:2-4, KJV)

167. The 'broad' arches are referred to as the whole formal unit, whereas it is structurally composed of a bounding arch adjacent to a short barrel vault.



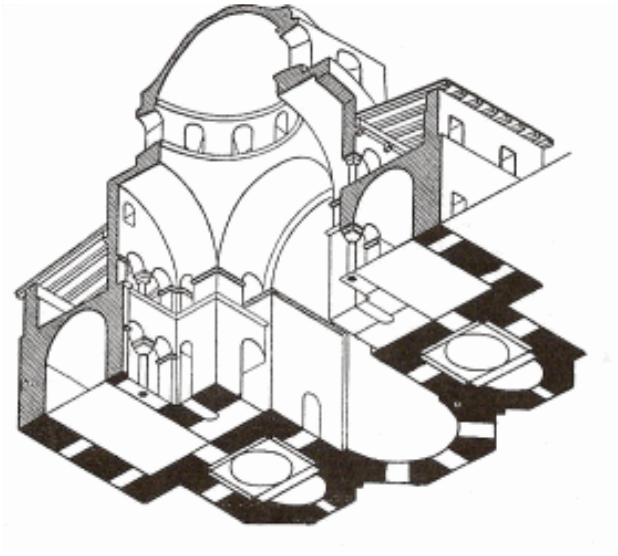


FIG. 79 Above left: The arrangement of four great arches under the dome of the very similar church of St. Mary of Ephesos. Source: Karydis (2011, p. 82)

FIG. 80 Above right: Cut away axonometric of Hagia Sophia Thessaloniki.

FIG. 81: Below: View of one of the broad arches from the naos, showing that its depth, scale and shape is similar to those of the nearby Rotonda. The construction was likely radial, and certainly used some centering. The main kosmitis at the gallery floor level is robust and able to support substantial centering. The cornice 2.4 metres above it would also have been able to support centering. The painted decoration is suggestive of radial and vertical brick patterns but may be unrelated. Photo by author.



These four arches will spring from the four (giant perforated) piers around the central square of the *naos* and span an average of 10.16 metres. They are Constantine of Rhodes' 'soaring vaults that bear the dome constructed roof' and they bind the four piers together, stabilizing them from lateral movement.[168] Structurally, there is a double geometry where the inner part of the pier supports a thickened 'bounding arch' that will bear the direct weight of the dome, and the rest of the pier supports a thinner barrel vault which works to buttress the dome's (centrifugal) lateral thrust at its base. The intrados do not show any distinction between the bounding arch and the short barrel vault but when one climbs up to view the extrados, one can see that the bounding arch is at least one brick (sesquipedalis) thicker than the vault. (see Figs. 57, 59).

Hagia Sophia's masons, capable of uncentered vaulting, are likely to have built strategically, to reduce the need for centering and timber formwork where possible.[169] The large span and structural importance of the 'broad' arches indicates the need for centering.[170] We do not know its design but it must have guided the shape and born some weight. Based on Karydis (2012, p. 10), limited centering at the top of the vault is a possible option.[171] The stone cornice at the springline of the 'great arches' could have supported the timbers, and at the gallery floor level, 2.4 metres below it, the wall sets back with the building's main stone cornice (*kosmitis*), offering robust support for any centering props. There is no such cornice when the broad arches extend into the sanctuary vault. However there may be putlog holes, now covered by plaster, along the painted and mosaic decorative line, where the pier buttressing stops on the extrados, which could have supported upper level centering and scaffolding for the masons.[172]

168. Or as Constantine puts it for the house of the Apostles, *'Then, like giants striding out grandly and stretching their right hands into the sky, one to another to their neighbours, and entwining fingers with fingers, like much-twisted rolling cylinders, they formed vaults of circular composition, from which they extend four well-arranged circles, which those constructing the work call arches, which bear the four-numbered equal domes.'* (In: James, 2012, p. 61) His imagery seems to emulate Paul the Silentiary's adoption of Homeric metaphors.

169. See Karydis (2012) ***'Limiting the Use of Centering in Vaulted Construction: The Early Byzantine Churches of West Asia Minor'***, Philadelphia: Center of Ancient Studies, University of Pennsylvania

170. In any arch there is a direct connection between structural intergrity and formal precision. The stability and strength of masonry arches, vaults, and domes depends greatly on accurate curvature. The upper half of the bounding arch (first layer) would have required centering, and even if the masons could build the vault ('broad' arches) without it the wiser course is to extend the formwork for the whole vault for the most accurate curvature.

171. Karydis (2012, p. 10) writes that, *'the broad arches of St. John at Philadelphia indicates that the use of centering was limited to a small part of the arches ... the only part of the broad arch for which the use of centering could not be avoided must have been the part that corresponds to the upper one third of the height.'*

172. See Theocharidou (1988, p. 37) for an explanation why the arcaded tympana to the north, south, and west, could not have provided reliable support for the formwork. In Hagia Eirene, Mainstone (1988, p. 204-205) gives the options of either a flying center or one supported from

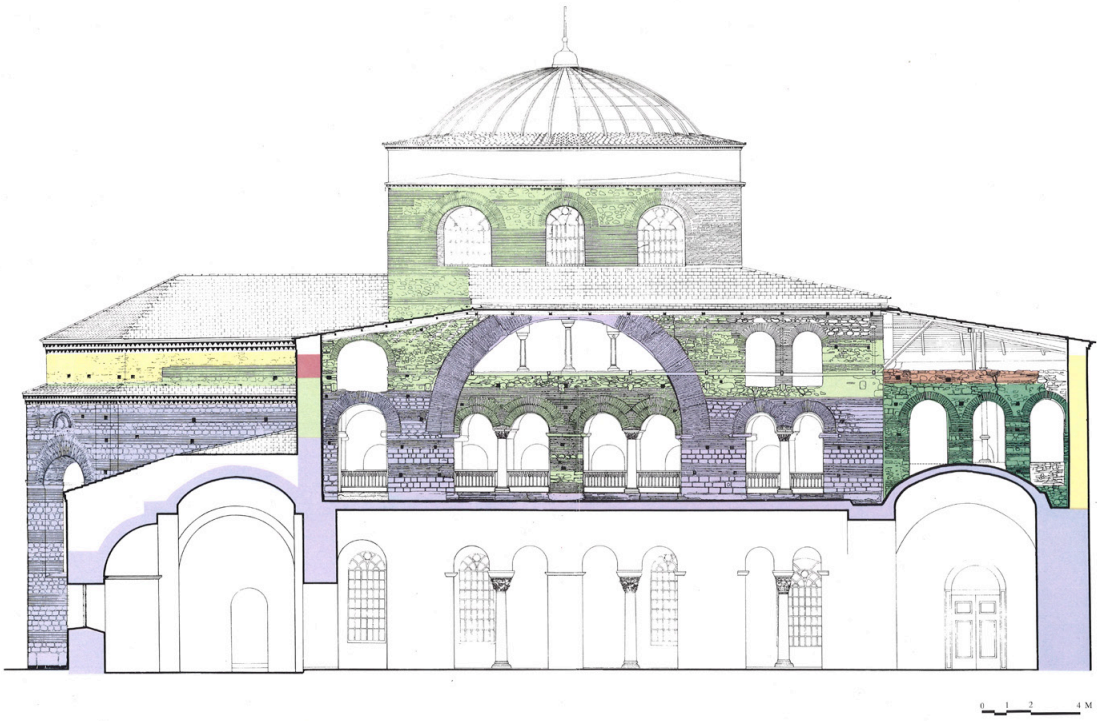


FIG. 82 Above: Section through Hagia Sophia's north aisle showing the exterior of the north 'broad arch' within the upper gallery. Note: Its radially laid bricks are intelocking and three deep.
Source: Theocharidou (1994)



FIG. 83 Left: The exterior of one of the four broad arches viewed from the upper level gallery. Smaller supporting arches fill in the arc to make a screen wall, thought to have been built in the second phase of construction. The similarity in brickwork suggests a date close to each other. The stone corbels probably supported a beam for a lower roof over the gallery, whereas a more recent roof is now supported at the top of the broad arch.
Photo by author.

We know that the Romans commonly used both radially and vertically laid bricks in their vaults. One must rely on other examples to surmise how they are set in these four 'broad' arches since the brickwork has been covered by plaster, and this UNESCO-listed building is in use. Writing of the Byzantine vaulted churches of Asia Minor, Karydis (2012, p. 10) maintains that 'these [broad] arches were invariably made of bricks laid radially'. In the 8th century reconstruction of Hagia Eirene's four 'great arches' one can see the exposed bricks which were laid radially over centering. This is also the case for the 7th century vaulting, of a similar size to Hagia Sophia's, that extended the Rotonda of Galerius into a church.[173] In Hagia Sophia, the trace profiles of bricks on the exterior of the broad vaulting are radially laid, though these represent the second or third row over the centering.

In the original vaulting of the Rotonda of Galerius, built in 306 AD, as in the Arch of Galerius, the exposed bricks are set radially and vertically in a pattern that suggests a mixture of centering and unsupported masonry. This vaulting, also a similar size to the four 'broad arches' in Hagia Sophia, is still almost completely intact. Herein lies a puzzle about Byzantine vaulting raised by Lancaster (2015, p. 58), that while the patterns used for setting the bricks are those used in uncentered vaulting, there is frequent evidence that centering was used:[174]

> The reason for using the vertical bricks at the crown of the vault when the haunches are built with radial bricks is not always clear. A. Choisy, in his 1883 monograph on Byzantine construction, discussed this type of hybrid construction and explained that the haunches were built up of radial brick without centering until the point where this was no longer possible and then the upper part filled in with pitched / vertical brick. (see Fig. 58)[175]

In his monograph, Choisy refers to construction without centering, but in Byzantine construction this seems to be found in the secondary vaults. Karydis (2012, p. 10) suggests that the broad arches of St. Mary of Ephesos and St. John at Philadelphia were built in two stages; firstly, the lower third built by 'oversailing' with slightly inclined bricks, and secondly the upper part of the vault

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below. However, Hagia Eirene's broad arches were over the gallery level.

173. See Theocharidou (1992, p. 62) in her monograph on the Rotonda.

174. When there is evidence of centering Lancaster suggests advantages that, *' in effect the vertical bricks would have provided some additional resistance to tensile stresses ... the increased resistance to cracking of vertical or pitched brick barrel vaulting was already noted by Choisy'* (2015, p. 61).

175. Lancaster (2015, p. 64) continues, *'a different use of vertical bricks appears in some late antique brick barrel vaults'*, and she goes on to give the Arch of Galerius and the Rotonda, as well as *'a vault under the Scholastica Baths at Ephesus'* as examples. *'This technique became more common in the Byzantine period and is visible in barrel vaults elsewhere at Ephesus at the churches of St. Mary and St. John.'* (ibid, p. 64).





FIG. 84 Above: The vaulted top surface of a broad arch, now under the timber roof. The bricks of the thicker bounding arch facing the naos are visible.The top surface of the vault bricks reveals the trace of a top layer of radially laid bricks.

FIG. 85 Right: Random bricks project up from these arches which probably gave better footholds for the masons' feet. They help to stabilise the thick mortar that has been poured over them. Photos by author.

FIG. 86 Below: The intrados of the reconstructed vault for the church of St. George within the Rotonda (circa 740 AD). Note the radially laid brickwork.



supported by shorter and lighter centering. [176] The two-stage uncentered vaulting methods would have allowed for a 'timber-saving formwork' which could 'adapt monumental construction to the economic realities of a period of limited resources' (ibid. p. 18). 'In addition to this, the uniformity of the broad arch sizes meant that their formwork could be reused for multiple broad arches', states Karydis (2012, p. 12).[177] A lightweight timber-saving formwork would have maintained a precise arc for the hemi-cylinder and supported the first shell of bricks until the mortar had stiffened enough for it to support a second or third row such as we see in Hagia Sophia's upper gallery (see Figs. 82, 83). This might explain the suggestive horizontal line in the decoration of all of Hagia Sophia's vaults, both in the aniconic mosaics from the 8th century and in the late Ottoman frescoing. It is a line that also appears in the brickwork of the tympana walls to the north and south side.[178] Though it cannot be verified whether the technique of building and closing the vaults in the Rotonda of Galerius might have been an inspiration for that which follows in Hagia Sophia, its familiar pattern for masons who knew uncentered vaulting would have contributed to the skill with which they built the four radial barrel vaults.

The upper part of the 'broad arches', like rainbows, remained open to the sky after the first two phases of construction, inviting the winds and sunlight from all directions into the *naos*, and connecting the 'chi-ro' geometry to the sun, stars and landscape. This area was not covered by timber roofing until centuries later (see Fig. 83).[179] The masons must have been able to gaze far into the landscape as they were building. Within the hierarchy of the Divine Ray in icons, the protoype rainbow arch is shown where the light of the heavens descends to the tops of mountains where angels are depicted. There, the 'uncreated' energy becomes visible light in the misty atmosphere of the earth. Locating the four

176. In his work on the transitional churches of Asia Minor, Karydis (2012, p. 10) writes, *'a closer look at the broad arches of St. John at Philadelphia indicates that the use of centering was limited to a small part of the arches. Indeed up to a level of almost +1.00, over the springing, the arch was built with over-sailing (corbelling) brick courses on roughly horizontal beds. From this level, and up to +3.65 m over the springing, the brick courses, having assumed an inclination of 13° are kept almost parallel and somewhat less than normal to the curve of the arch.'*

177. *'This made it possible to contsruct the broad arches in two stages. Once the lower arch-ring was built, the timber formwork could be removed. The complete ring could now provide support for the upper ring. This method reduced significantly the number and size of beams of the formwork.'* (Karydis, 2012, p. 12)

178. Mainstone (1988, 204-205) remarks on the building of Hagia Sophia in Constantinople, that the tympana would have interfered with natural settlement unless the top parts were removed. Theocharidou (1988, p. 37) cautions against seeing the 'arcaded tympana of the north, south, and west arms of the cross' as part of the first phase.

179. This roofing would probably have been fixed to a beam lying on the stone projections all along its outer wall. According to Theocharidou.(1988, pp. 41, 43-44) in the second phase the tympana were constructed up to the horizontal line and the exterior roofing over the galleries lay below it, leaving the top portion open to sunlight and air.

'broad' arches within Cosmas Indicopleustes' diagrams (see Chapter 4, Figs. 31, 32) they would belong in the *stereoma* or firmament, a realm between the 'upper waters' and the 'lower waters', between the cuboid earthly realm and the vaulted divine realm.[180] The arches must literally establish a stable connection to the earthly walls below them.[181] The four broad arches of the *naos* were so stable that they survived the collapse of the first phase, and did not need to be re-built in the second phase.

Byzantine arts present analogies for the immaterial aspects of God using tangible and material form. Their sculpture as well as their architecture was undercut and perforated, a dialogue between tangible mass and its absence. St. Mark the Monk, a student of St. John Chrysostom, makes this comparison,

> What a house is to air, the spiritual intellect is to divine grace. The more you get rid of materiality, the more air and grace will come in of their own accord; and the more you increase materiality, the more they will go away. (St Mark the Ascetic #112, p. 134, Philokalia Vol 1, Eds./Trans. Palmer, Sherrard, and Ware, 1979)

Every arched door and window illustrated how the wall sacrificed its shadow to admit the light. Arches emphasised the openings in the solidity of the four 'perforated pillars'. The rainbow as the heavenly arch was the analogy which brought the aesthetics of light to its earthly figure in an intimate relationship with gravity.

5.7.8 Pendentives that are hanging

Spanning between the four bounding arches around Hagia Sophia's *naos* are four pendentives which make the transition from the square base of the broad arches to the circular base of the central dome above (see Figs. 89, 90, 95, 98). The iconography of Byzantine churches assigns a variety of symbolism to the four pendentives. The Sougitha has seen them as 'outcrops of rock',

> 'Other arches are set around like some outcrops of rock on the top of a mountain; It is on them, in them and by them that the entire roof is joined to the arches.' (Sougitha, l. 8, In: Mango, 1972, p. 58)

They were associated with four archangels as seen in Hagia Sophia in Constantinople; the four constellations of solstices and equinoxes and the four gospel

180. The firmament is described in Genesis 1:6-7 *'And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters. And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so.'* (KJV)

181. The concept of instability in the earthly, sensory realm was part of the masonry walls' materiality. The vertical walls of unreinforced masonry materials are unstable in earthquakes, up to the moment that they are unified by the span of a vault or dome connecting them.

books of the evangelists as seen in Hosios David; four angelic levels as noted in the mosaic of the Koimesis church; the four elements which make up the human body, and the prophet Ezekiel's chariot.[182] Within Christian iconography these represented the face of the number four facing the four directions of the large bounding arches under the central dome. Since the angelic symbolic images combine the earthly stability of the numerology of 4, with the lightness associated with the wings (*ptera)* of archangels, let us look at the tangible analogies which could communicate this apparent contradiction to the masons.[183]

The advantage of the pendentive is that it allows for domes to be constructed over large, open arches, as opposed to the earlier technique of squinches which require solid walls below (see Fig. 89). According to Lancaster (2015, p. 74), the pendentive dome is a derivative of the radial brick sail vault. Hagia Sophia's masons had already learned how to construct sail vaults and a pendentive dome over the narthex.[184] Here, though they were not simply 'scaling-up' for the central dome, since there are constructional differences in the setting of the pendentives. According to Choisy, (1899, p. 93) there were two methods of how the Byzantine mason set his bricks for pendentives; for a pendentive dome the bricks are set into the intrados of the bounding arches, wheras for a dome on pendentives they bear on the extrados.[185] Karydis (2011, pp. 89-91) explains 'the structural difference between pendentive domes and domes on pendentives' using the example of Hagia Eirene in Constantiople where one of each was built over the nave in the 8th century reconstruction (see Fig. 88).[186] Pen-

182. Matthew the Man, Mark the Lion, Luke the Bull, and John the Eagle provided legitimacy for the apostolic succession and became the foundation of the four Christian gospels. They appear as the four faces of the cherubim according to Ezekiel 1. 5-10, reappearing in Revelations 4. 7 as the four creatures of the apocalypse. Their symbolism can also be traced to the four canopic jars which carried the four parts of the human body into the afterlife in Ancient Egypt.

183. The roofs of Hellenistic temples were called '*ptera*', meaning wings, and were carved with feathers. The expression "it takes two wings to fly" became four in the dome on pendentives.

184. Lancaster (2015, p. 74), cites examples in Fayoum, Egypt, built in the Roman empire which were adoped outside Egypt in the 2nd century under Trajan and Hadrian. Karydis, too compares the vaulting of St. Mary of Ephesos with archaeological sites hear Fayoum. (2011, p. 153)

185. The difference between these two domes and their pendentives is also explained in Choisy (1899, p. 91, Figs. 407 and 408). Karydis (2011, pp. 74-78) reconstructs the church of St. John the Theologian's *'vault fragments A and B'* from a pendentive dome, and *'vault fragment C'* belonging to a dome on pendentives such as we have in Hagia Sophia. There are clear structural reasons for the diffferent bearing of the pendentives; a pendentive dome will exert a horizontal thrust in line with its curvature and requires the bounding arches to be both buttressing and support; a dome on pendentives exerts a downward force equal to its weight which is only partly converted to horizontal forces by the curve of the pendentive. The dome of pendentives therefore needs it own buttressing around its base, and requires the bounding arch to be primarily supportive.

186. Karydis (2011, p. 89-91) looks at two pendentive techniques, both observed in the late 8th century reconstruction of Hagia Eirene's domes. In the first example of the 'pendentive dome'

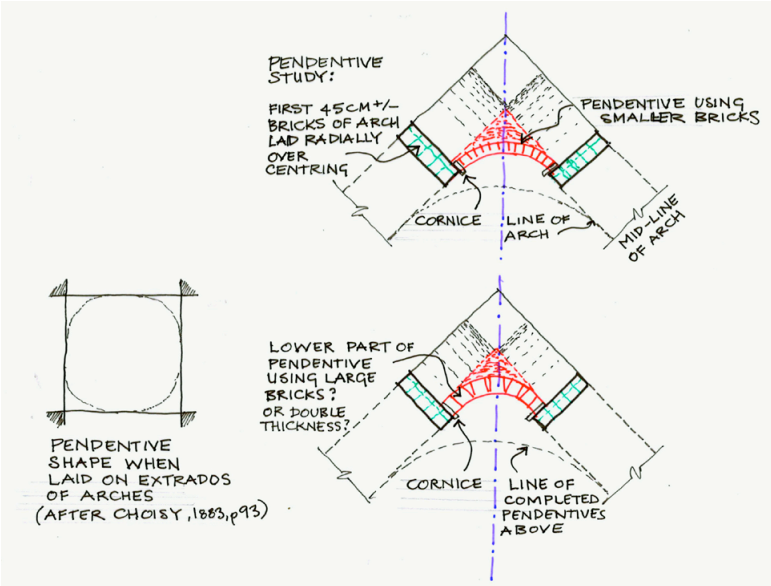


FIG. 87 Above: Diagrams of dome on pendentives. Study of pendentives with bricks laid on the extrados of the bounding arches, after Choisy (1883, p. 93) Drawn by Author.

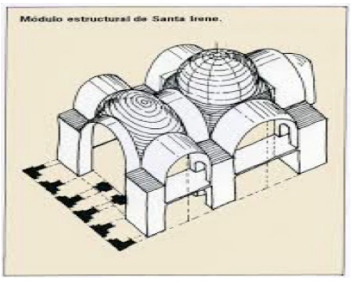


FIG. 88 Above: The difference between 'Pendentive Dome' and 'Dome on Pendentives' (Hagia Eirene).

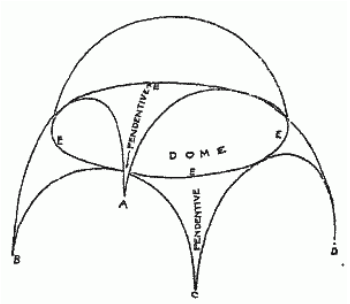


FIG. 89 Above: Dome on Pendentives, 'Like a Helmet' [Available from: http://www.hellenicaworld.com/Greece/Literature/Various/en/3/fig_9.png].



FIG. 90 Left: View of Hagia Sophia's pendentives from below. The face of the arch is about 0.5 m high before a grey marble cornice sits over it to frame the pendentive. The top cornice over the pendentives does not not make a precise circle They exemplify the way that all pendentives tend to be a bit irregular. There is no easy compass set-up for building a pendentive and masons tended to follow broad guidelines (see Choisy, 1883, p. 192-6)
Photo by author.

dentives compose approximately triangular segments of a sphere whose centre is a point within the *naos*.[187] In a 'pendentive dome' the same sphere is built up to form the dome. In a 'dome on pendentives' the hemisphere is built around a central point higher up, like Hagia Sophia's central dome (see Fig. 89).

For the mason, the art of corbelling the bricks outwards, high above the open space of the *naos*, is a greater challenge than all the smaller arches, domes and vaults that he has just built. The pendentive depends greatly on the skill of the mason, since there would not have been a precise central compass used for building pendentives on the extrados.[188] They were most likely measured from the adjoining arches, as the shape reduces from the square to the circle.[189] The mason builds without supports and he must either stand within the space, under his work, or on top of the nearby arches on his previously completed work. His focus must not falter.

The pendentives were constructed with arcs of bricks pitched at a 'flatter than radial inclination.'[190] One can deduce that they were laid on top of a grey stone cornice that laid over the extrados of an initial arch constructed over the centering.[191] The method is shown in Choisy (1899, p. 92-93). The depth of

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on the west bay of the nave, the bricks of the pendentive are laid against a sloping line of bricks within the face of the bounding arch, and the dome continues the curve set by the pendentives. In the second example, the bricks of the pendentive are laid on the extrados of the bounding arch. The dome does not follow the curve of the pendentives but is a seperate hemisphere set on the circle of the finished pendentives, making a 'dome on pendentives'.

187. Constantine of Rhodes' *ekphrasis*, is translated by James, (2012, p. 60-61, ll. 623-625) as *'they formed vaults of circular composition, from which they extend four well-arranged circles, which those constructing the work call arches, which bear the four-numbered equal domes.'* The word 'σφενδόνη' could mean the bounding arch that bears the dome, but it also has the meaning of a sling or slingshot and could mean the pendentive which literally forms the circle which bears a dome. cf. Karydis (2020, p.124) who concurs on this translation and interpretation in his footnote #90.

188. Most pendentives have only an approximate relation to a sphere whose centre is far too inconvenient to locate in order to build a compass. A more convenient guiding device could have been constructed between adjacent broad arches, if required.

189. The contemporaneous masons of the East also used pitched and curved techniques to get a smooth finish for both pendentives and squinches. The Islamic descendents of the Sassanian Persians, developed a refined technique which gave great accuracy by using the geometrical relationship between the square and circle with repeated mini-gestures to build up to the grand sweep of the squinch or pendentive. This embellished the corbel with angled bricks, rather like the radiant frieze but in a corner. The visual effect is similar to that of the tops of iconic mountains, and is highly stylized and celebrated. This effect is marked in Persian domes stretching east into India.

190. Mainstone (1988, p. 209) describes the much larger pendentives of Hagia Sophia in Constantinople as being of 'normal bricks set in a normal slow-setting [lime] mortar' but agrees with Choisy that the 'large face-dimensions of the bricks in relation to their thickness' along with setting them at a 'flatter than radial inclination' would have enabled the masons to build without additional supports. In structural engineering terms, the 'friction factor' (or 'coefficient of friction') increases as the brick face is increased, relative to the fluidity and stickiness of the mortar.

191. cf. Karydis (2011, p. 130).

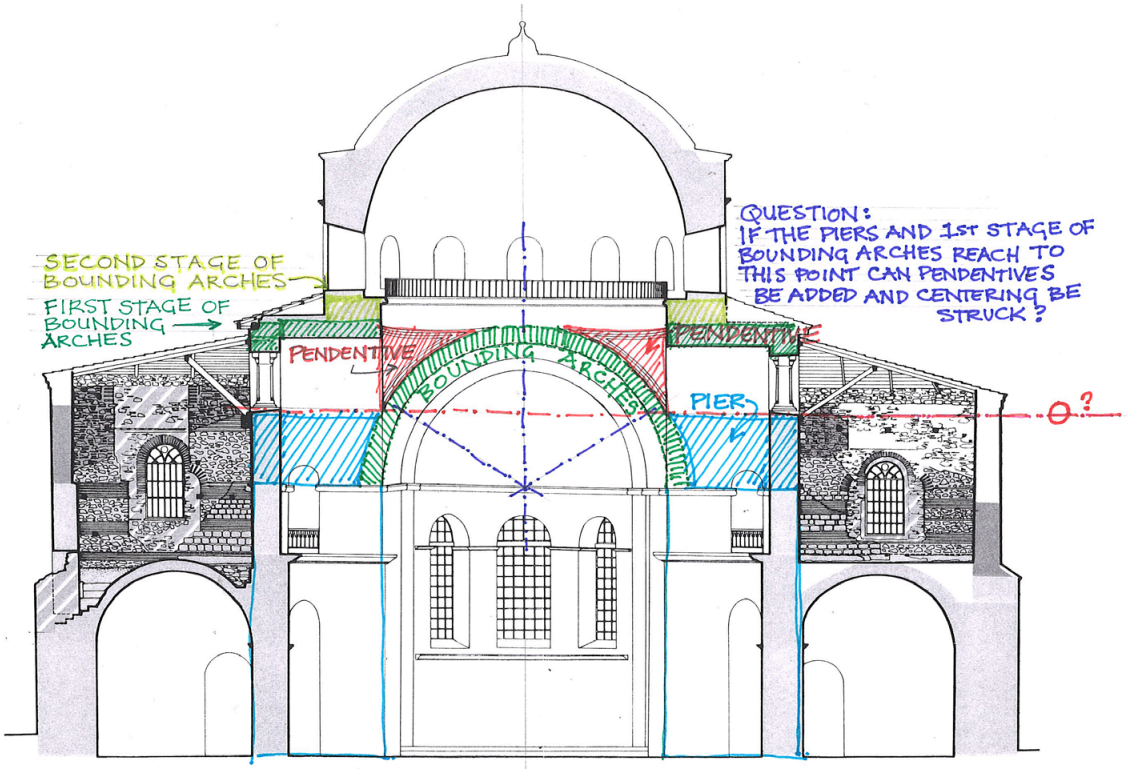


FIG. 91 Above: Transverse N-S Section of Hagia Sophia, showing the logic used to derive the stages for constructing the pendentives. Source: Annotations by author on Section by Theocharidou (1994)

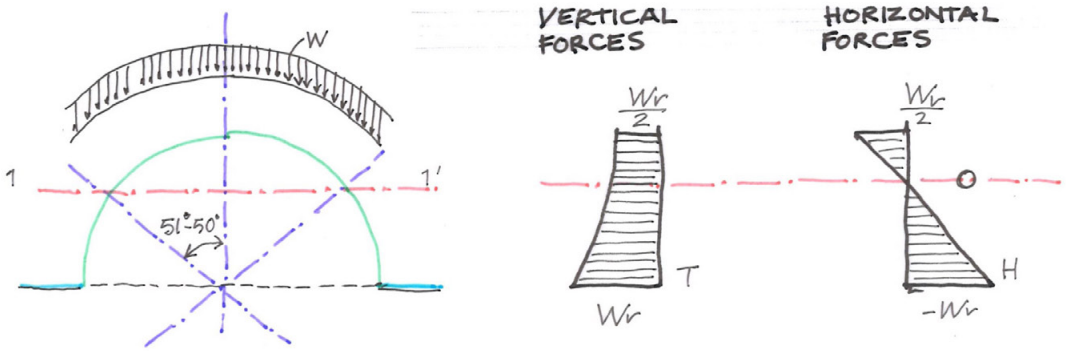
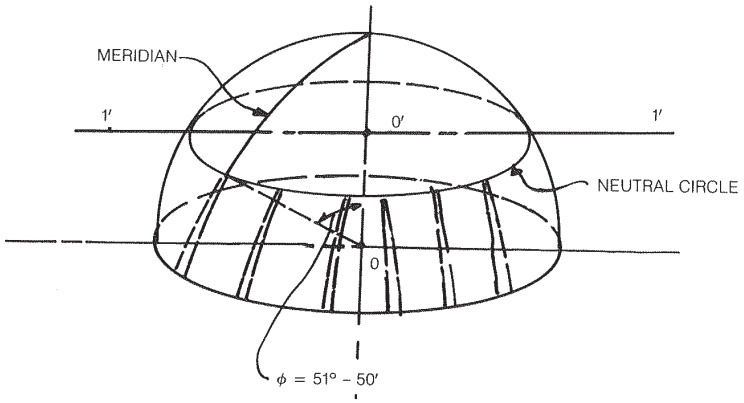
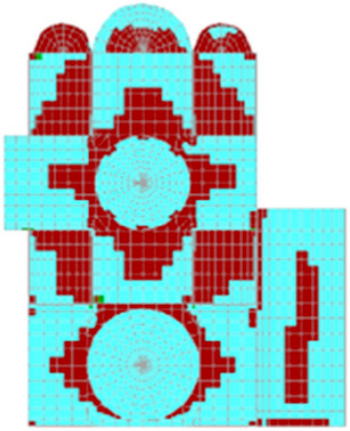


FIG. 92 Above: The structural logic for stages of pendentive construction; meridinal force T (vertical compression) and the hoop force H (horizontal forces) for a hemispherical dome. H moves from centrifugal at the base to centripetal at the crown, passing a zero level. The same principle applies for the broad arches. Source: Khalili (1999, p.198), sketch by author.

FIG. 93 Below left: 3-dimensional diagramme for calculating the hoop and meridinal forces in a hemispherical dome. Source: Khalili (1999, p.198)

FIG. 94 Below left: Finite element analysis of Kaisariani monastery church, showing the areas of stress between its central dome and four barrel vaults. Source:





the arch below the stone cornice is about 45 - 50 cm; equivalent to one Roman 'sesquipedales' or possibly two smaller bricks (see Fig. 87, 91).[192] The cornice defines a strong, curved line and is a precisely shaped surface from which to measure the pendentive during construction (see Choisy, 1899, p. 92).[193] It may also have had other functions as a ledge for scaffolding.

Correct construction sequencing, row by row, would have been important to maintain the best balance of tension and compression between the three elements of arch, pendentive, and buttressing pier.[194] According to structural logic and good construction practice, the masons would have built the bounding arch and its buttressing pier simultanously for the lower part of the arch (see Figs. 91, 92).[195] Their combined mass would have provided the proper buttressing for the lateral thrust that will come from completing the bounding arch.[196] It also would not have over-stressed the centering.[197]

Judging the point at which the bounding arch should be completed would have been vital to the stability of the corner piers with the pendentives.[198] By comparing the cross section of the church with the statics of lateral forces generated by arches and domed forms, one can see that the start of the pendentive is

192. Estimating the size from, 1) Theocharidou's measured drawings, 2) visually from a distance, and 3) the size of the radial bricks visible in the upper galleries.

193. Choisy remarks on the general shape of pendentives relative to a circular dome base; in St. Marks of Venice, the pendentive arcs deviate towards the inside of the circle; in Hagia Eirene and Hagia Sophia, Thessaloniki, they deviate towards the outside of the circle. Both deviations are illustrated in Choisy (1899, p. 93) and both indicate that, despite the regular geometry shown in Fig. 108, there was no central compass set up in Hagia Sophia to guide their shape to perfection. Pendentives on large domes did not generally have a compass.

194. See Karydis' (2011, pp. 74-78) drawings showing the relationship between arch, pendentive, and pier buttressing the extrados.

195. The static principles work the same way as the system of vaulting in Fig. 58, where the mason built up the haunches first. However, for these large arches the bricks would have been laid radially. Mainstone (1988, pp. 202-205) suggests that in Hagia Sophia Constantinople, the broad arches may have had flying centering.

196. Karydis (2011, p. 161) writes of the transitional churches in Asia Minor, *'Our survey identified three ways of dealing with this problem: the method used in Philadeliphia consisted in distorting the spherical shape of the pendentive structure, in order to make its intrados engage with the faces of the barrel vaults. A second solution, attested by a fragment in Sardis, was to separate the barrel vaults and pendentive with a wedge shaped border made of radial bricks, (charfrein) maintaining a smooth transition between the two structures. A third way to deal with the same probem was to provide the barrel vaults with a sloped face ("skewback") for the pendentive contruction during a period when the techniques of covering rectangular bays by spherical vaults had not yet entirely matured.'*

197. Karydis' (2011, pp. 74-78) work in reconstructing of the pendentives of St. John the Theologian in Ephesos has the advantage of seeing the ruined interior of the walls and can give a good idea of how Hagia Sophia's pendentives were probably constructed.

198. Mainstone (1988, pp. 200-204) describes the building of Hagia Sophia in Constantinople's broad arches on the piers, with reference to the near-disaster described in Procopius (1954, Buildings I i. 68-71, pp. 28-29).

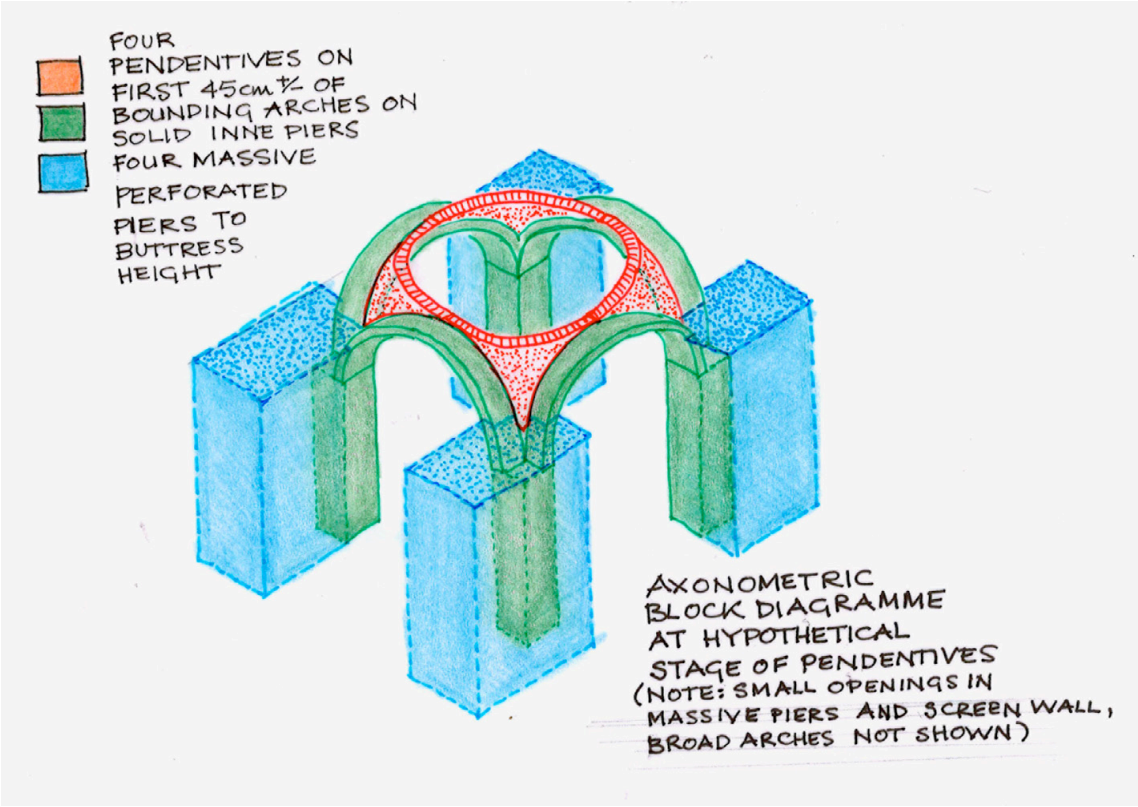


FIG. 95 Above: Relationship of pendentives, bounding arches, and massive piers. Drawing by Author

FIG. 96 Below Left: Extrados of the upper part of the pendentive, after ascending within the massive 'perforated' pier, and before ascending a small stair to to the top of the 'broad' arch. Note the brick sizes for the upper half of the pendentive are not very big (approx. 30-35cm) and two large putlog holes that are not very deep. Photo by author.

FIG. 97 Below Right: Small stone stair ascending to top of 'broad' arch. Photo by author.





about at the line where horizontal tensile forces (thrust) have reduced to zero and where horizontal compressive forces are only just beginning in the arch. Therefore the pendentives are perfectly positioned to enable the masons to finish the first radial brick arch over the centering, building up the pier for buttressing at the same time. Then the next stage would be to build the pendentive while continuing build up the pier on its extrados and tying it in as required. Thus the pendentive could be built as a defined element while being embedded 'like entwined fingers' within the whole structural complex (see Figs. 95, 97).[199]

The name 'pendentive' brings to mind the concept of 'hanging' from above, rather than supporting from below.[200] In both Hellenic and Hebrew cosmologies there are indications that the earth hangs down from the heavens.[201] We find the following reference in the book of Job, 'He stretcheth out the north over the empty place, and hangeth the earth upon nothing.' (Job 26:8-11, Trans. KJV)[202] This was was later cited by Cosmas Indicopleustes in his 7th century Christian topology,[203]

> About which it is written in the book of Job, Heaven inclined towards earth, it pours itself down like fine mist (dust) of earth. This stuck itself together like a cubic stone. Again, it has

199. Connecting the broad arches together is compared to 'entwining [interlocking] fingers with fingers', and *'ὃυς σφενδόνας καλοῦσιν'* (Constantine of Rhodes, In: James, 2012, p. 60) could be referring to the pendentives and translated *'that they call a sling-shot'*. If the pendentive is indeed placed onto the first row of brick arching over the centering, and later two more layers of bricks are arched on top to create the bounding arch, then Constantine's imagery could be describing this process of layering and interlocking.

200. Demus (1976, p.12) writes that the aesthetic of *'Byzantine architecture is essentially a "hanging architecture", its vaults depend from above without any weight of their own.'*

201. Bogdanovic (2008) suggests connections between the hanging tent of the ciborion, which conferred sacredness to the space it defined, and the ancient greek symbolism of the mountain. *'The term τὸ κιβούριον was related to the Greek noun o οὐράνος and the eschatological descent from heaven to earth, the realm between heaven and earth, a vault or firmament of heaven.'* (Bogdanovic, 2017, p. 20). *'Moreover, the mountain (ὄρος, oros and οὐράνιος, ouranios) could denote by extension the κιβούριον, kiborion. The mountain as a sacred space and symbol of the ladder to heaven where the sun god and other solar deities supposedly lived has its roots in Ancient Greek tradition.'* (Bogdanovic, 2017, p.) One can also look to Dionysios' *Mystagogia* for the kataphatic definition of creation.

202. *'ἐκτείνων βορέαν ἐπ᾽ οὐδέν, κρεμάζων γῆν ἐπὶ οὐδενός·*
δεσμεύων ὕδωρ ἐν νεφέλαις αὐτοῦ, καὶ οὐκ ἐρράγη νέφος ὑποκάτω αὐτοῦ·
ὁ κρατῶν πρόσωπον θρόνου, ἐκπετάζων ἐπ᾽ αὐτὸν νέφος αὐτοῦ.
πρόσταγμα ἐγύρωσεν ἐπὶ πρόσωπον ὕδατος μέχρι συντελείας φωτὸς μετὰ σκότους.
στῦλοι οὐρανοῦ ἐπετάσθησαν καὶ ἐξέστησαν ἀπὸ τῆς ἐπιτιμήσεως αὐτοῦ.'
'He stretcheth out the north over the empty place, and hangeth the earth upon nothing.
He bindeth up the waters in his thick clouds; and the cloud is not rent under them.
He holdeth back the face of his throne, and spreadeth his cloud upon it.
He hath compassed the waters with bounds, until the day and night come to an end.
The pillars of heaven tremble and are astonished at his reproof.' (Job 26:8-11, Trans. KJV)

203. Cosmas Indicopleustes, 1909, LIB IV Χριστιανικη Τοπογραφια, p. 129
'περὶ ὧν ἐν τῷ Ἰὼβ, γέγραπται, Οὐρανὸν δὲ εἰς γῆν ἔκλινεν, κέχυται δὲ ὥσπερ γῆ κονία. κεκόλληκα δὲ αὐτὸν ὥσπερ λίθον κύβον. περὶ δὲ τῆς γῆς γέγραπται πάλιν ἐν τῷ Ιώβ , Ὁ κρεμνῶν τὴν γῆν ἐπ᾽ οὐδενὸς, ὡσανεὶ μὴ ἔχουσαν ὑποκάτω τι.'



FIG. 98 Above: View from the 'naos' up into the dome, which is slightly set back. The pendentives end in an irregularly shaped circle, and the set-back provides a thin ledge-like balcony with a handrail. While the dome is normally seen as part of the space of the 'naos' below, this balcony also defines the upper space of the dome as a separate celestial 'room'. The chandelier is now hung about two metres below the focal point where the compass would have been fixed. Though the visual centre is where the figure of Christ is ascending, the gravitational focus of the dome is at this compass centre. Photo by author.

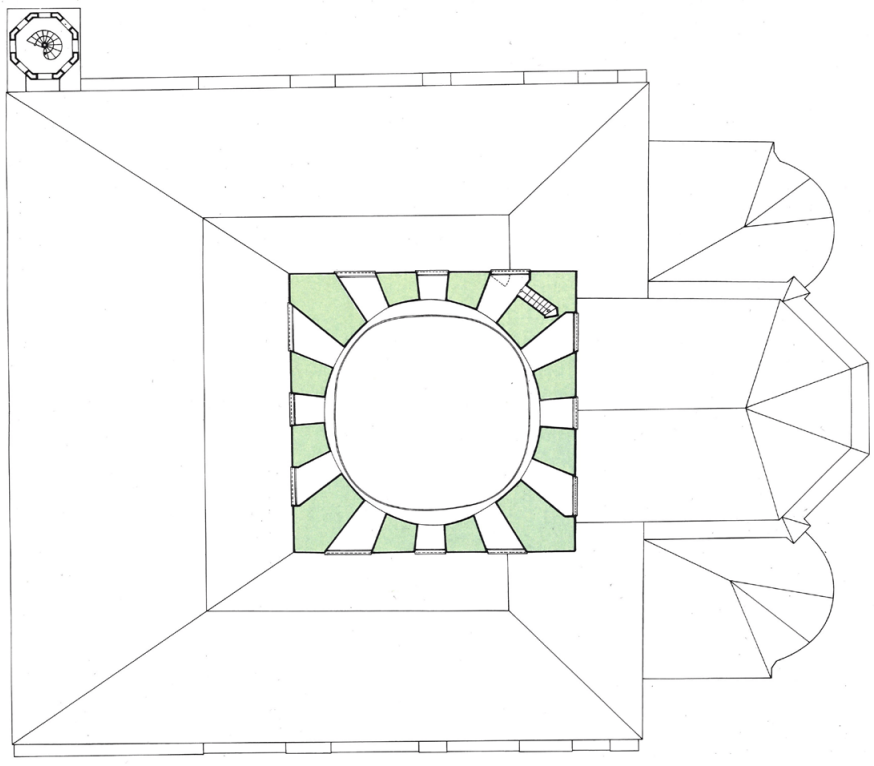


FIG. 99 Left: Plan of the dome of Hagia Sophia Thessaloniki showing the irregular form of the dome on pendentives which later collapsed, and the more regular form of the rebuilt dome, slightly set back, with square buttressing. The stair in the corner ascends to the top of the dome. According to Velenis (2003), there should be another stair in the opposite corner.

Source: Theocharidou (1994)

been written in Job about the earth, He who suspends the earth over nothing (in space), rejoices not to have anything underneath. (Cosmas, 1909, Trans. author, p. 129)

This widespread concept must have analogies in human experience. In architecture there is an analogy in the experience of the mason.

The mason has the sensation of hanging because his work is resting on gravity itself. To build a pendentive, he must work intimately with gravity to 'hang' the bricks onto the previous ones, using the arch principle to span between solid faces, as he daringly inches his bricks outwards to span over the empty space at the highest point thus far on his journey upwards. Like a spider weaving its web, or a rock climber wedging himself between two rock faces, the mason must trust even more than before in the gravitational pull to lock his bricks into place.[204] The masons must build attentively and faithfully to the top where the pendentives must join into a connected circle (see Fig. 98).

The pendentive is the device whereby the symbolic stability of the number four, in this case the square of the four great arches, is merged with the circle. In the masons' experience it merges with an aesthetic of divine weightlessness.[205] The mason constantly negotiates the weighty solidity of his materials, the bricks, into a position where they are so well attuned to the form generated by gravity, that the weight becomes seemingly weightless. His pendentives are the fulfillment of Bachelard's 'material imagination', establishing the 'coherence of the mind'.[206] Through his own methods the mason touches the *anafora* that is enacted in the liturgy, that 'referring up' and that remembrance. Far below, he built the space for the *Hagion Pneuma* (Holy Spirit/Breath) to manifest, in the *chora* of the peoples' body. Now, at these heights he must float with the *Hagion Pneuma*; he must produce work that is consistently *acheiropoeiton*.

5.7.9 Completing the Central Dome

In their journey to completion, the masons have moved through the upper parts of the building and now reach the springing of the large central dome of almost

204. Karydis (2012, p. 13) explains why formwork is not required when building a pendentive. '... the bricks are not laid radially in relation to the centres of curvature, but at a slightly "flatter" inclination. Provided that the mortar used was sufficiently fast-setting, the inclination of the bricks, intentionally gentle, was not enough to make the bricks slip from the mortar-beds below them. Therefore, this particular part of the structure did not require formwork.'

205. As if on the wings of Foucault's aemulatio, the square ascends to the circle: the image is referred to the archetype; the Word returns to God (the ineffable One); the divine names (qualities in creation 'per accidens') reflect the One who is their source ('per se'); the earthly merges into the divine.

206. The figure of the dome on pendentives is compared to a divine helmet, firmly joined to the arches, in the *Sougitha* (I.6, In: Mango, 1972, p. 58) and to a 'divine head-piece' by Paul the Silentiary *ekphraseis*. (In: ibid. p. 82) and 'a helmet rounded on all sides' (ibid. p. 83).

5.5 metres radius. They have built the four broad arches on the four massive 'perforated' piers to buttress the weight of the dome in a seismic event; they have built up the four bounding arches to a robust thickness of 1.2 - 1.4 metres to support the dome; they have built up the pendentives between them and made a platform the size of the earthly cube of the *naos*, with an almost circular hole looking down into the church (see Fig. 99).

Upon completing the circular top of the pendentives, the masons would have needed to set up a compass for measuring the circular base of Hagia Sophia Thessaloniki's large hemispherical dome. The changes in materials have indicated to scholars that the drama of building the central dome happened not once but twice in Hagia Sophia Thessaloniki (see Figs 4-7, & 103). [207] To rebuild a second time, the Master mason had to re-position the centre above the *omphalos*, just as he had done the first time. Any small discepancy would mean that the dome did not sit centrally on the pendentives.[208] As we have seen, masons have to build these kind of pendentives on the extrados of the bounding arches by measuring from adjacent arches. They rarely make an exact circle in Byzantine churches since a central compass is not generally used to form them.[209] Thus the masons copied the clever solution from Constantinople and set the new dome further back from the front edge the pendentives. This created a slim balcony which was accessed from the exterior by 12 windows (see Figs. 94, 95).[210]

As a matter of science, a compass is only precise as long as the central point does not move. The masons must have realised the wisdom of their *architekton* (Master mason) whose first action was to set a firm pole in the earth marking the *omphalos* (*umbilicus soli*, or navel). Referencing it they could now bridge across the top of the pendentives and drop a plumb line (thin rope with lead

207. After taking into consideration Kalligas' archaeological findings, Theocharidou assigns the present dome and its cuboid buttressing to a second construction phase. She assigns all exterior rubble stone walling to the second phase or later. It seems strange that the masons would have made the same errors and employed the same solution in Thessaloniki as they they did in Constantiople over 200 years earlier, however until further evidence comes to light, this opinion will likely prevail. If this is the case, the most likely reasons for the collapse of the first dome are a) too many windows and not enough solid connection or lack of sufficient buttressing leading to the dome shearing off its base in an earthquake (soft storey), b) an irregular dome shape due to plastic mortar flow, pendentive irregularities leading to irregularities in the dome shape, differential settlement (though there is no evidence for this).

208. This would exaggerate the effect of eccentric loading during a seismic event.

209. One can often see similarly irregular pendentive circles in old Byzantine churches, such as Panaghia Angeloktisti (a 5th-6th century basilica merged with an 11th-12th century domed church) and the late 9th century Hagios Lazaros in Cyprus. Both of these churches were clearly built with a great deal of skill and formwork saving centering, and they are certainly not unique examples.

210. Statically speaking, the masons have positioned these windows at the base of the dome below the springline, which makes them safe and straighforward to build.

weight on the end) to position the central axis of the dome. The person-sized windows at the base of the dome facilitated this (see Fig. 97). The dome must be built around this axis in order to position it at the building's centre of mass and maintain intergity between its masonry shell and its supporting buttressing, the lower arches, domes, vaults, and walls.[211]

An unreinforced masonry dome is only stable if a uniform, symmetrical shape is measured and built within acceptable tolerances (see Figs. 98, 100, 101). Therefore a system to measure the radius such as a radius arm must be fixed in the centre, at the springline of the dome, and rotated around (see Fig. 98). Its extent must guide the masons to place every brick accurately in the dome shell up to the summit. The exact details of this compass are not known. It is most likely to have been the mason's rope or thin chain, attached on one end at the dome centre and on the other to the mason's wrist, as was traditional in the East.[212] This would have enabled them to build the dome shell either from inside or standing outside, as if on top of the iconic mountain after finally emerging from the cave.[213] Logically this method is safer since double curvature compression shell structures have a high weight-bearing capacity due to their high strength to weight ratio and high stiffness.[214]

The second dome is taller than the the first (see Figs. 4,5, 7 & 99). The Master mason increased its butttressing by carrying up the square base, as measured between the solid piers of the *naos*. Simultaneously with this buttressing, the Master masons would have built the lower one third of the dome in which its bricks are only slightly oversailing the dome diameter, measuring each brick with the compass.[215] Assisting their work from the top of the secondary domes

211. The lower part of the building is not technically buttressing the dome in static terms, but to take advantage of the base isolation system that he has put in place in the foundations, the Master mason must build the dome at the centre of mass, so that the building can respond as one entity when subjected to seismic ground acceleration.

212. Traditional compasses range from a length of chain or rope tied to the mason's wrist to assemblies made from wood. Masons who have continued these traditions in Mesopotamia (greater Iran) continue to build with the same methods and tools.

213. This method was used until very recently in traditional Persian masonry construction, and is used in modern masonry dome construction. The advantage of having a central post was to be able to make an elliptical dome with two focii attached to the post at different heights, and the rope or chain on the mason's wrist freely sliding.

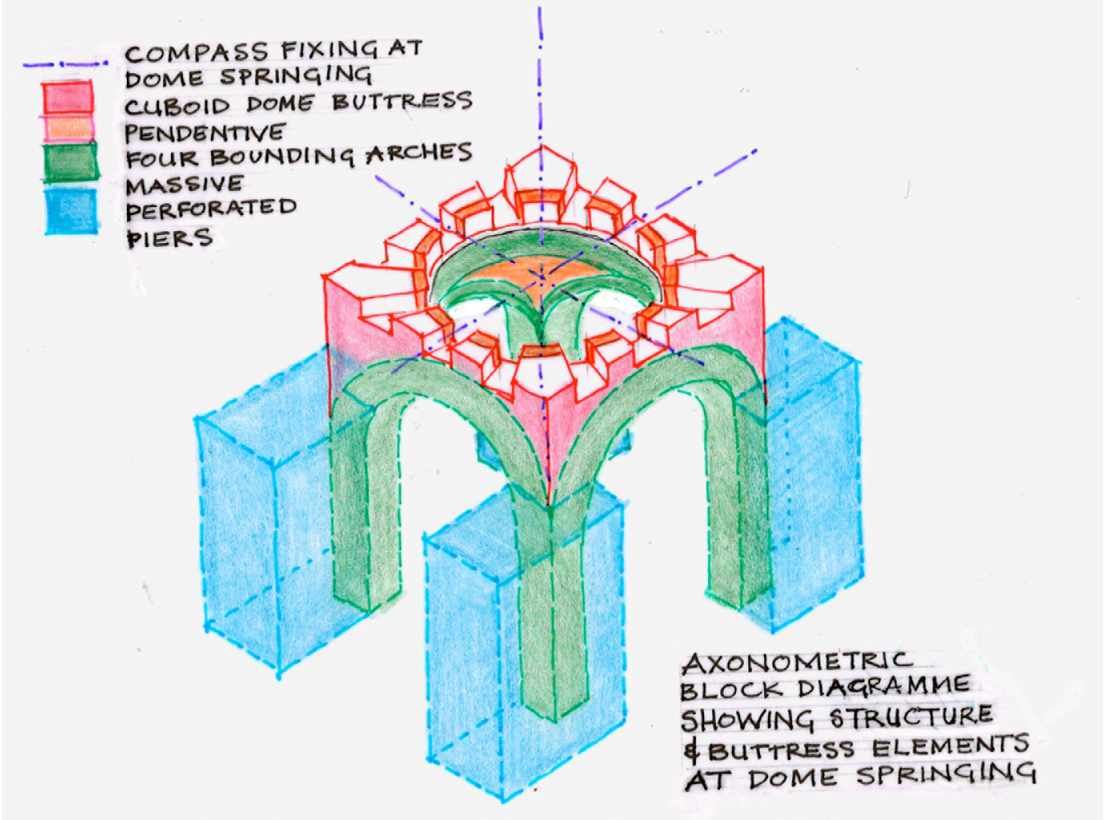
214.When mud-dried bricks are combined with dry-pack fragments, and wet mortar is used, it is not necessary to have temporary supports on a dome, because all are highly absorbent. When the bricks are kiln-fired and the mortar is lime or cement-based there is more chance of slippage and some temporary restraints can be used. In either case, when a ring of bricks is completed around the dome it locks into place and does not fall; it has nowhere to go.

215. There may well be a symbolism to the cubic base related to Cosmas' quote of the book of Job (see footnote #202.) Aside from providing extra buttressing, this large cubic base has puzzled scholars. Velenis (2003, pp. 74-94) explains that two small spiral staircases built into



FIG. 100 Above: View from N-E corner. Street level is +/- 2 metres above the church floor here. The dome and its square drum, with 3 windows on each side, show the geometry of the church core. They are thought to have been built in the second phase. The windows appear irregular on the square outside but are regular on the round drum inside. Photo by author.

FIG. 101 Below: Axonometric showing the components of the central core of the church. The dome springing is cleverly positioned, level with the springline of the window arches (see Figs. 10 & 23). Here, the 12 mini-window vaults could be built over small arched formwork as there will be no over-sailing on the dome, but the masons can make use of the window openings to enter the workspace and to support their builder's scaffolding/platform, or possibly for the fixings for the compass, or for centering if it was used to build the dome. Sketch by author.



and vaults, the labouring apprentices and less skilled masons would have continually passed up a flow of mortar mixtures and bricks to the experienced masons who were building up near to the rim of the dome, and to the Master mason who set the bricks.[216] There would have been putlog holes in the dome and probably some projecting bricks on the extrados to bear the masons' feet and tools as they were building upwards.[217] My fieldwork visit to the top of Hagia Sophia's great arches revealed some of these projecting bricks (see Fig. 84).[218] The masons would have continued to build up the dome and circular buttressing together until the plane of zero hoop forces (see Figs. 89, 90). Building the lower portion of a cathedral's dome reminds us that, 'Its high dome is comparable to the heaven of heavens; It is like a helmet, and its upper part rests solidly on its lower part' (Sougitha, v. 6, In: Mango, 1972, p. 58), combining cosmology with a grounded mindfulness.

Sources vary as to whether the Byzantines built their larger hemispherical domes to the top with or without centering. For the huge 33 metre diameter hemispherical dome of Hagia Sophia Constantinople, Mainstone suggests that there was some 'light centering', following the tradition of the Romans who employed centering.[219] However, this dome in Thessaloniki is only a third the diameter at under 11 metres, and the scale of the brick in relation to the curva-

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the corners, enabled the chanting choir to ascend to the dome balcony and up onto the dome exterior, during the metropolitan liturgy. Also that it may have been the base for a second storey wooden dome or ciborion. In this case, Hagia Sophia, Thessaloniki, as a metropolitan cathedral, has elaborated on its namesake in the capital and added a new regional element. He finds this two storey dome feature adopted in later regional churches such as Panaghia Chalkeon.

216. Professor Velenis hinted, on our visit to the upper gallery level over the narthex and side vaults, that there may have been an earthen ramp that led from the lowest level of building all the way up to the staging platform for building the top dome. This would have added substantial weight but, as a concept, may consequently give clues about the sequence of construction.

217.High up in the interior of the domes and semi-domes of nearby buildings one can see the many square putlog holes, such as in the Late Roman Rotonda, and the Acheiropoeitos basilica. Their size and distribution are suitable for inserting wooden exterior scaffolding, or for suspending interior scaffolding that could be used for finishing the stucco and mosaics. Such holes might also have been part of some temporary restraints for bricks at steeper angles higher up the dome. It is not known what sort of internal scaffolding Hagia Sophia's masons built up stand on. However, the level of the bottom of the windows in the drum is just below the springing of the dome, and would have been a convenient level at which to insert scaffolding, using the window openings.

218. During my field work I was taken up above the domes and vaults of the narthex, and above the four great arches as far as the square base of the dome. We could not see the top of the dome nor could we ascend the small spiral stairs to the exterior as these were walled up and the dome is covered with its final metal roofing layer. We did, however, climb on top of the great arches, and adjacent masonry area which had been the rooftop before the later addition of the gallery timber roof. On the great arches some bricks had been left sticking up, which we can assume were either for the feet of the builders, or for supporting the roof covering, or both.

219. See Mainstone (1988, pp. 216-217)

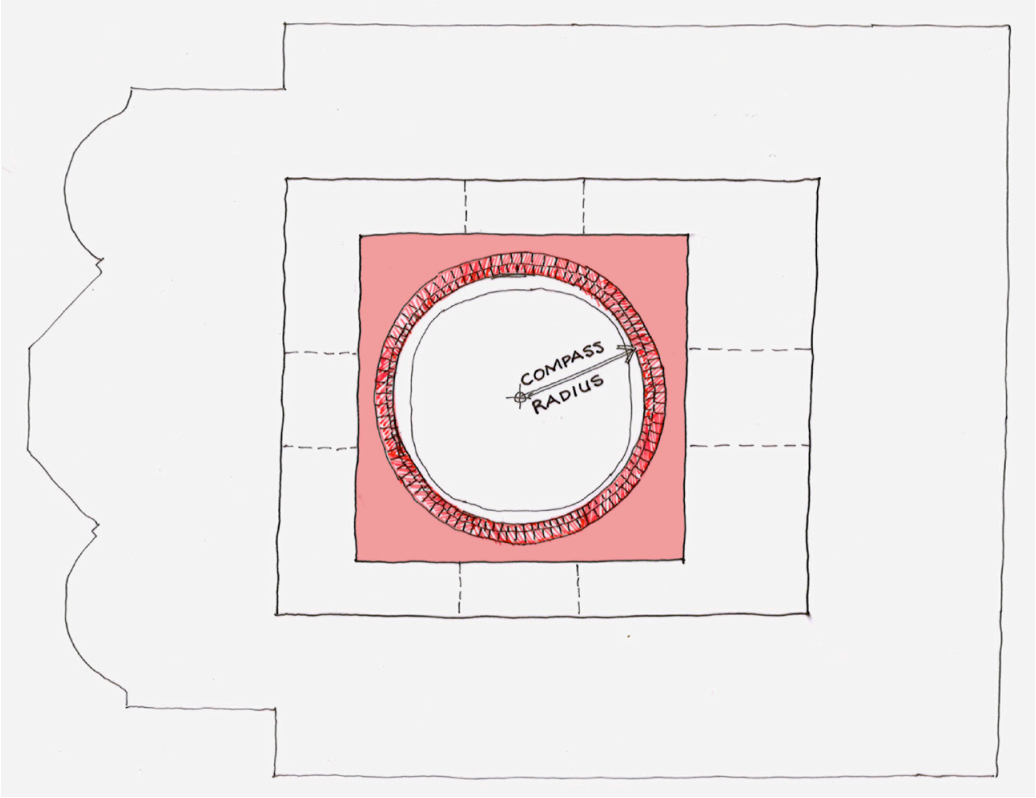


FIG. 102 Above: Plan of the dome just above the springing and above the windows in the drum. It is only possible to estimate the thickness of the dome shell. This drawing shows a double layer of pentadoron or tetradoron sized bricks (see Fig. 34 for standard brick sizes). Drawing by author.

FIG. 103 Below: Dome and supporting structure of the late 12th century former church of Theotokos Kyriotissa, Constantinople (now Kalenderhane Jami). The dome is smaller than Hagia Sophia's, but shows how brick ribs facilitated its hemispherical construction. These were not necessary at the top of the dome. They were probably emphasised for the iconography of the central pantocrator and radiating lines of saints. The 'broad arches' are of radially laid bricks built over centering. The bricks of the pendentives are inclined and oversailing. Photo by author.



ture of the dome is a relevant factor.[220] The masons clearly knew how to build the smaller pendentive domes of the narthex without centering, by using inclined brickwork and minimising the head joints. Their abilities in uncentered barrel vaulting must have helped them to build the much larger four 'broad' arches using radial brickwork over centering. The masons' ability to build uncentered smaller domes may have led them to complete the main dome without centering. Equally well, they may have applied their skills to building the top of the central dome over 'formwork-saving centering', such as Karydis suggests in his comments on 'standard domes of circumferential courses'.[221] A third option includes brick patterns that create arc nodes or lines of stability within the dome shell which use the principle of curvature to create stability during construction.[222] Though a modern brick mason, using traditional methods, would not require centering , there is not enough evidence on the technique that the Byzantine masons used to finish the top of Hagia Sophia's dome. All we can reasonably suppose is that they would have aimed for a precise shape that is structurally strong with the minimum necessary cost and labour.

By now, the building itself would have physically become an iconic mountain. The masons climbing up and down bringing bricks and mortar would be literally walking the path of the theological and cosmological hierarchy, and they must have total faith in the process. Replete with all the symbolism of the heavens that we have seen in the imagery of icons in Chapter 4, the dome completed the top of the entire cosmological mountain that is the cathedral (see Fig. 100). The geometry of their journey towards remembrance of unity within diverse multiplicity is summarised by Dionysios as,

> ... the discourse, in descending from the above to the lowest, is widened according to the de-

220. Sanpaolesi (1972, pp. 221-260) compares the dome of the Soltanieh mausoleum of Ilkhan Ulgiaitu at 25 m. diameter with that of S. Maria del Fiore in Florence at 42 metres; neither used centering for construction, though their dome curvature is taller than hemispherical. A comparison of the world's large masonry domes shows that their curvature was taller than hemispherical to make it easier to build the upper part of the dome with uncentered brickwork. On the other hand, masons in Egypt and Mexico do build sizes of hemispherical domes of the order of 10 metres in uncentered brickwork, though their mortar mixtures and technqiue may be different to the Byzantine masons.

221. *'Each complete course, because of its double curvature, would have functioned as a circular arch, and would not have collapsed, even if the circumference of the dome was incomplete ... once the courses are complete, they constitute arches locked into position. The only support required is the timber template necessary to hold the bricks in place until they form a complete course.'* (Karydis, 2012, p. 14)

222. Using brickwork patterns to facilitate the construction process without centering was known to the Byzantines, though generally visible in smaller domes, such as the crypt of St. Demetrios in Thessaloniki. Sanpaolesi (1972, pp. 221-260) shows that much larger self-supporting domes than this one in Hagia Sophia were built with the help of brick patterns. In his comparison of the domes of the Soltanieh Mausoleum, Iran, and that of S. Maria Del Fiore, both 14th century and of the order of 25 m diameter, he describes a system of ribs that are completely integrated into the dome and create a smooth interior surface.

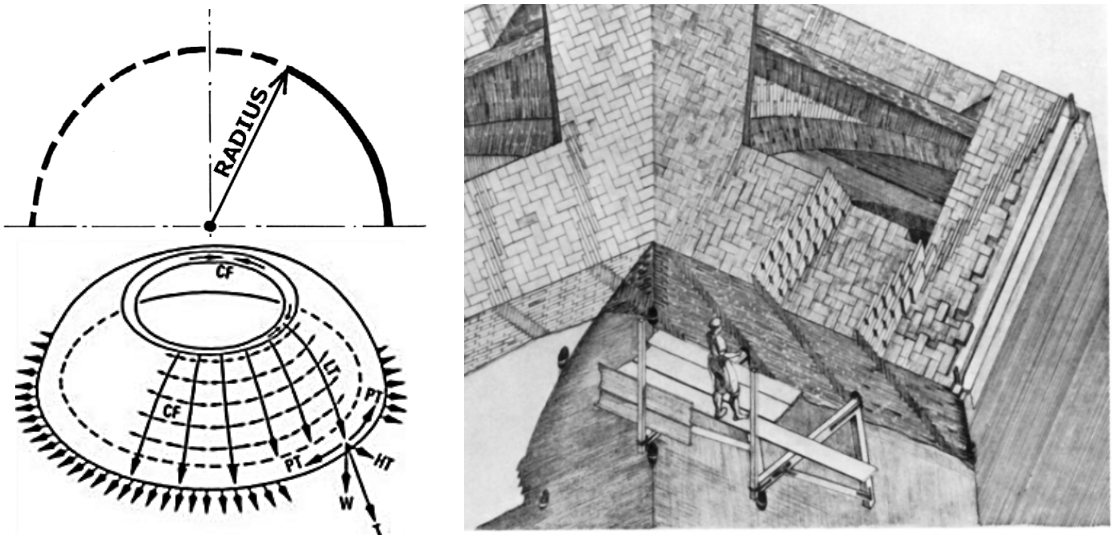


FIG. 104 Upper Left: Simple compass principle for a hemispherical dome and structural lines of force. Top image by author, lower image available from: http://www.earth-auroville.com/maintenance/uploaded_pics/2-forces-dome.jpg [Accessed: 5 June, 2019]

FIG. 105 Upper Right: A method of changing brick orientation for hidden ribs, found in Santa Maria del Fiore and Soltanieh Mausoleum dome, Iran, 14th C. Source: Sanpaolesi (1972, p. 250)

FIG. 106 Below: A 7.5m diameter modern brick dome, 10cm thick, constructed without centering, as compared with Hagia Sophia's 11m diameter. The 'brick hanger' devices (two bricks on a piece of string) were required because the densely crystalline modern brick and cement mortar (without aggregate) make no first-contact bond. The innovation of 'brick hangers' holds the brick in place by gravity for a short period of time until the row is complete, then they are removed and re-used. Hagia Sophia's secondary vaulting tells us that the more absorbent Byzantine bricks and sticky lime mortar made a good first-contact bond. The technique of touching head joints (one minutely above the other) can be sufficient to build a dome of slightly flatter than radially laid bricks when the bricks and mortar make a good initial bond. On this late 20th century dome the central compass is a metal pipe, whereas if Hagia Sophia's masons used a compass it would most likely have been of rope, fine chain, or wood. (Author is working in the background with a fellow builder in the foreground.) Photo by N. Khalili.



> scent, to a proportionate extent; but now, in ascending from below to that which is above, in proportion to the ascent, it is contracted, and after a complete ascent, it will become wholly voiceless, and will be wholly united to the unutterable. (Dionysius, 1897, MT III:1, p.93)

If we continue to seek analogies between the masons' journey, the hierarchy of iconography, and the ritual sequence of experiences in the liturgy, we can say that the masons are reaching up ever closer to the source of the Divine Ray, and the team are reaching a time of communion under the dome brought by the *Hagion Pneuma* when the divine breath descends into its home in the body. One might say that the mason 'is one who aspires to circumscribe the incorporeal in a dwelling of flesh.'[223]

Building the dome is the greatest challenge and the pinnacle of achievement for a Master mason and his team. In their precarious position they must work as a close team in wordless communion, protecting each other from harm. As one entity their hands mixed mortars, carried bricks, and placed them with thick aggregate mortar. Row after row the huge, heavy structure extended out, high up over space. The compass guided their hands to lay each brick in harmony with the unremitting force of gravity, training their senses until some become master masons.[224]

The unmoving central point at the heart of the dome is the best analogy that the mason has for the point of origin of the Divine Ray, which in icons was hidden behind a cloud, or a holy figure, or somewhere off canvas. This unmoving centre is an analogy for the point of stillness in a steady heart described by the Hesychast monks of the *Philokalia*. 'Attentiveness is the heart's stillness, unbroken by any thought,' advised St. Hesychios in the *Philokalia*. [225] The Master mason must be attentive with every pore of his intuition.

In his journey of ascent the mason works through his backache, headache and lethargy until the physical residue of stresses, hopes and fears in his muscles dissolves. He is not only lifting the weight of the bricks or stones, he is lifting the weight of the heart. St. John Climacus advised those on his *Ladder of Divine Ascent*,

> The hesychast is one who says: "My heart is strengthened" (Ps. 57:8). The hesychast is one

223. "The hesychast is one who aspires to circumscribe the incorporeal in a dwelling of flesh." (St. John Climacus (2020) c. 6-7th century, *The Ladder of Divine Ascent*, Step 27)

224. The old master masons of Iran built their smaller and mid-sized domes for houses, schools, and suchlike, using the span of their hands as a compass. Today, too, the experienced traditional masons in Mexico (*bovederos*) and Egypt are so attuned to gravity that they are guided directly, without tools, to build small dome spans.

225. St. Hesychios, 1979, On Watchfulness and Holiness, The Philokalia, Trans. Palmer et Al, Vol 1, p. 163



FIG. 107 Left: The centre of the 'naos' showing the 'omphalos' (navel) stone directly below the apex of the dome. The chandelier hangs at about two metres directly below the geometric centre of the dome, distributing light as if from the energy of the centre.



FIG. 108 Below: Drawing of the omphalos of Hagia Sophia, Trebizond, later taken to Thessaloniki by refugees.

Source: Texier and Pullan (1864, Plate XVI)

who says: "I sleep but my heart watches" (Cant. 5:2) (St. John Climacus, Step 27)

For the mason to find the strength to lift this weight, he must sacrifice anything in his mind and heart that pulls him off balance with heavy emotions, and diverts his materials from moving smoothly into their natural place in a unitary, balanced dome. This is the mason's *anafora*.[226] The mason offers up his flow of diverse thoughts and scattered attachments in order to do this difficult job perfectly, time after time, brick after brick throughout the day. In the liturgy during the *anafora* the Holy door to the altar is closed, while the assembly are exhorted to 'stand well (firmly), stand in the midst of fear'.[227] They must learn to be guided by the light that is 'not "accessible to mortal eyes".'[228] The mason, in his repetitive action laying bricks, is also being guided and is reaching that *anenergesia* (doing while not-doing) described by Dionysios and demonstrated by Jesus when healing on the Sabbath. As Ingold (2013, p. 55) writes, 'the lineaments of the structure, far from being imposed upon the material, emerge from the process of building itself.' As the mason learns by analogy to surrender his self-image in the presence of the ineffable, to allow God to do work though him, so to speak, the heavy mass of his building materials start to fly into exactly the right place without further resistence. Dionysios describes the 'resistless' quality of being borne up (*anafora)*,

> "For by the resistless and absolute ecstasy in all purity, from thyself and all, thou wilt be carried on high, to the superessential ray of the Divine darkness, when thou hast cast away all, and become free from all." (Dionysios, trans. Parker, J. 1896 p. 192)

The Master mason would be entrusted with the privilege of setting the last bricks at the pinnacle of the dome.[229]

Those who had quieted their mind and focussed on the 'heart' of the dome, built the 'space' (*chora*) of their lives. They built a work 'made without hands' (*acheiropoeiton*), a place where 'the heavenly God dwells and walks',

> Its ceiling is stretched like the heavens – without columns, vaulted and closed, And furthermore, it is adorned with golden mosaic as the firmament is with shining stars. (Sougitha, v. 5, In: Mango, 1972, p. 58)

226. The mason's sacrifice is analogous to the *anafora* of the liturgy. And one might argue for a similarity here with Foucault's aemulatio, though equally well one can compare the action of this moment with sympathy for his materials and fellow masons.

227. "στῶμεν καλῶς· στῶμεν μετὰ φόβου" (Papakosta, 1950, p. 98)

228. Veniamin (2014, p. 95). Here his footnote #24 reads 'Cf. for example: St. Basil of Caesarea, who says that this light is "contemplated only by the mind" (διανοίᾳ μόνῃ θεωρητόν), Homiliae in Psalmos 44:5 (400BD).'

229. Like the iconographer who meditates on the heavens while he paints their reflection in paint (or mosaics), the mason also has his meditation while has builds his analogy of the heavens.

They will have walked up and down every rung of Dionysios' mystagogic ladder of ascent and descent within a masonry methodology.

5.8 Removing the compass and coming down to earth; the Omphalos

The masons' long climb up the levels of symbolic theology was almost complete when he placed the last brick in the main dome, but not quite. After waiting a short time for any immediate problems to appear, his final act is to remove the guiding compass from the focal point. When it is taken off, only an echo remains to remind anyone of its presence. Today, a chandelier spreading light hangs from this point at the heart of the dome.[230] The dome, truly built, now rings like a bell, ready to reverberate with chanting praise.

After reaching the very pinnacle of ascent and closing the dome, the masons must begin their journey back down to earth. With their few small tools they climb down the giant mountain of earthly matter that they had built as 'a heaven on earth wherein the heavenly God "dwells and walks"'.[231] They take with them only their experience and how it has changed them as humans. Soon they must start finishing and inscribing its interior space with marble and mosaics (see Chapter 4 on iconography).

They take out the first pole and set the *omphalos* stone into the floor in its stead. All the Hagia Sophias have, or had, an *omphalos*.[232] It marks the symbolic centre from which this architectural microcosm of the universe has been spun out. These circular 'omphaloi' on a vertical axis below the dome indicate the 'navel of the earth', a place which ritually confers earthly power and a passage to the region below the church, the underworld of the ancients (see Figs. 73, 74).[233] In Thessaloniki, as in all the other cathedrals, the liturgical action of the Great Entrance lingers over the *omphalos*.[234]

230. To be exact it is around two metres below the dome's central point, since it site on a low drom which accommodates much of the arched openings to the dome's gallery.

231. These are the opening words of the early 8th century *Historia Mystagogica* attributed to the Patriarch Germanos, (In: Mango, 1972, p. 141). His reference is likely to 2 Corinthians 6:16.

232. St. Mark's Cathedral in Venice has one, as does Hosios Loukas in Greece, and even the 19th century Hagia Sophia in London. The 13th century Omphalion of Hagia Sophia in Trebizond (Trabzon, Turkey) was such a vital symbol of the community's single focus, that it was removed and taken with the refugees in the 1920s. It is now in the Museum of Byzantine Culture in Thessaloniki.

233. In ancient times, the renowned omphalos in Dephi gave authority to the Dephic Oracle whose voice issued from the cave to answer the questions of her distinguished visitors.

234. Christ's epitaphion (cloth image placed on a bier), and coffins of the dead are also placed on it at funerals. Emperors were crowned on Hagia Sophia Constantinople's omphalos. Trebizond's community took up the omphalos from their Hagia Sophia and brought it with them as refugees to Thessaloniki in 1924.

The mason has built his upward ladder and has attained the summit. Then returning back down to the ground one realises he has also built the downward ladder. He has trod this ladder up and down, down and up, throughout the entire course of the building. The fruit of his work connects the topmost summit with the lowest foundation in the earth, just as he was connecting it within himself as he worked. The building itself connects these two ends of the ladder, if it is built right and does not collapse. If it is built in harmony with the scientific laws of nature and gravity, of God's universe, then it will stand by itself. Just as the human being must stand in the *chora*, in the blessed centre of this space of angelic radiations. His journey up and down the ladder has polished, cleaned and repaired this connection. It has "cut away all the encumbrances upon the clear view of the concealed".[235] His long journey up and down has polished the connection between God and creation, between the one and the many, between Unity and diverse multiplicity. This unity is celebrated by the users and inhabitants of the church in the sound of the liturgy as it reveberates.

Today, at the end of the liturgy the priest stands on the steps leading up to the *bema* projecting his voice into the *naos* in praise. The current Archimandrite Eirinaios Boyiatzis, has a rich and powerful voice that he raises to its ultimate volume in praise so that the entire church seems to ring like a bell, echoing back the sound. One can sense how he enjoys celebrating this unity of its structure. As he hits the notes at the right pitch for the cathedral, one has a sense of total unity, an experience in which Hagia Sophia is truly an *'empsychos naos'*, a temple endowed with the breath of life.

5.9 Conclusion

Buchwald (1999, p. 47) remarks on 'a stong sense of unity' created by the large central dome on pendentives over an orthogonal basilica as well as other features such as a tightly coherent system of proportions, and the undercut aesthetic of the Byzantine column capitals.[236] He then concludes, 'The greatest contradicion, however, is between the engineering system required to support the enormous dome and the appearance of weightlessness and lack of structural effort.' Here he is expressing the point at which the masonry dome and the Byzantine theological aesthetic meet; this intangible is given expression in the design of the 'basilica dominated by a dome over the centre of its nave' (ibid. p. 43) of which Hagia Sophia in Thessaloniki is one of the finest standing exam-

235. Dionysios 1897, DN IV: IX, p. 33. (See also Plotinus 1989, Ennead I: 6: 9)

236. These remarks are made in reference to Hagia Sophia Constantinople as a trend-setter, in 'Saint Sophia [Constantinople]: Turning Point in the Development of Byzantine Architecture?' In: Buchwald (1999) Form, style, and meaning in Byzantine church architecture. Aldershot: Ashgate Variorum

ples.[237] The Byzantine architectural space was inhabited in its symbolic and analogical qualities, without denying its functional aspects. The building was tangible and sensory, yet its image was constructed with immaterial aspects such as the masons' feelings, the movement of air in the *naos*, the sunlight which enters through the windows, the echo of the space, and with their absence.

> For it is not possible for our mind to be raised to that immaterial representation and contemplation of the Heavenly Hierarchies, without using the material guidance suitable to itself,

wrote Dionysios in the Heavenly Hierarchy (1897, p. 149). In Hagia Sophia, the door and window locations are given both symbolic meaning and practical functions. Because they are linked by cosmology through an architecture that is in harmony with the laws of nature, there is no conflict between their liturgical use and their practical placement which is to bring in light and create air movement.

This chapter has analyzed the steps of a possible mason's anagogic journey, comparing it with the essential progression of concepts in the known mystagogy of the liturgy. In addition, this case study of Hagia Sophia, has shown many clues suggesting that masonry architecture carried a symbolism equivalent to that found in icons. I have argued that these stages can be understood primarily through Dionysios' theology and the hierarchy of iconography's Divine Ray within the context of the 6th-9th century. Despite the lack of specific textual references, the analogies are numerous and poetic and speak for themselves.

The mason's journey from effort and labour to harmony and weightless ease took him through different levels of his relationship with God.[238] This last can be compared with Foucault's fourth figure of sympathy in which antipathy is encountered and finally resolved within the person. In Dionysios' words,

> The purpose, then, of Hierarchy is the assimilation and union, as far as attainable, with God, having him Leader of all religious science and operation, by looking unflinchingly to His most divine comeliness, and copying, as far as possible, and by perfecting its own followers as Divine images, mirrors most luminous and without flaw, receptive of the primal light and the supremely Divine ray, and devoutly filled with entrusted radiance, and again, spreading this radiance ungrudgingly to those after it, in accordance with the Supremely Divine regulations. (Dionysios 1894, HH III: II, p.156)

237. Demus (1976, p. 12) writes, *'Byzantine architecture was essentially a "hanging" architecture, its vaults depend from above without any weight of their own.'*

238. We can see the geometry of the figure of analogy in the masons' methods, which Foucault described as a combination of the chain of convenientia and the circles of aemulatio. These geometries transpose into the masons' mystagogia as the ladder and the centre-perimeter, and they were notated in the six directions of the chi-ro, the chora.

In building a dome, the masons establish the relationship between centre and perimeter, from the pre-existence of God before the mason establishes a centre point, to the creation of the building as a perimeter with reference to that centre point, and to the completion of the building where each part refers back to the origin again through sound. Dionysios and Maximos seem to fuse their theology with the masons' journey: 'All the radii of a circle are concentrated into a single unity in the centre'.[239] Indeed, traditional domes were formed using a rope or compass-chain attached at the centre and extending to every point on the perimeter. Every brick or stone block would thus be measured and accuratley placed during construction. The gravitational force pulling on each brick appears to the builder to be converging at the centre.

Since the Byzantine mind did not portray perspective or objectify space, one must concude that all these parts of Hagia Sophia were experienced subjectively. This is especially so in the methodology of the masons who sequentially built the foundations, the perimeter walls, the arched openings, the square central *naos*, the massive perforated piers and the columns with 'wind-swept' capitals, the long barrel vaults and upper galleries, the three apses to the east and the multiple smaller domelike vaults over the narthex, the four broad arches around the *naos*, the four pendentives, the cubic dome base with twelve windows, and the central dome.

By removing the central compass-chain after the dome is completed, the mason made a final apophatic gesture of removing all things from the centre including himself; only an echo reflecting back into the centre from the perimeter walls remains. The shell of the domes and vaults then become the container which contains the uncontainable, where every part refers to the point of unity at the centre 'beyond all'.[240] The form of the dome, the apse above the sanctuary, and the other apses of the side chapels, then become the vessels in which the sound of the liturgy is shaped; they become the echo-chambers for the *synaxis* who become like the hermit crab re-inhabiting the molluscs shell.

As the mason takes his journey from the summit back down to earth he is completing the cycle of the ladder of ascent and descent. Just as he connected what is below the earth to the unitary summit in his anagogic journey, his descent is symbolically connecting the limit of apophatic movement whose term is the ineffable, unknowable One, with the limit of creation ('the far reaches of the ocean' of diverse multiplicity). There is a coherence of logic and the sensory world.

239.. Maximos (1985, MT p.)

240. 'He Who is beyond all' Dionysios (1987, MT III, p. 90)

6.0 CONCLUSION

6.1 Recap of my main research question

This thesis started by asking how masonry architecture might represent theology. Was there ever a conscious connection in the minds of the builders and users of masonry buildings and how could one research this? If a transcendent God is resident in the immanent, how does masonry architecture express this concept as a 'House of God'? The question went further. Anyone can call a church a 'House of God', but how does the human being percieve this? Should the house not also give some clues about its singular, supreme and beloved inhabitant? Was there a conscious language whereby the building itself could indicate that divine Reality? And if there were could we propose, for the sake of architectural theory and theoretical discussion, that the architect or Master mason had understood how to build with this language and teach others to build, learn and percieve?

The 8th century Byzantine cathedral of Hagia Sophia, Thessaloniki, provided me a case study building with a 'Rosetta Stone scenario'. Its living liturgy, iconography, and masonry building, interact today almost as they did then. Assuming that the priest, the iconographer, and the Master mason were each 'makers of sacred space' within their own field, I followed their symbolic language. I applied a methodology of translation (*ekphrasis*) between: a) liturgical and theological texts leading up to its time of construction, b) the visual map of its iconography, and c) the church's masonry architecture, while experiencing Hagia Sophia, as fieldwork in the Rosetta Stone scenario. These were my keys to being able to propose a translation for the undeciphered language of the masons, their practices, and their buildings.

The question contains an observation: that masonry architecture was a meditative practice many thousands of years old, probably co-inciding with a revolution in human consciousness. Through the story of the Byzantine church 6th-9th century, one begins to understand how such ancient methods of masonry architecture, that pre-date even writing, became fused with the emerging religion of Christianity. The timing of Hagia Sophia, Thessaloniki's construction during iconoclasm suggests to me that masonry's ancient practices were more stable than the religion, which was still in development. One can see it as the mother-drum for a Christian melody, or a touchstone for bringing the intense theological debates of the early centuries down to earth as a kind of 'logic-checking tool'. Who knows whether the earliest followers of Christianity might not have also been builders of arches, domes, and vaults? After all, in the east-

ern Orthodox tradition Christ was born in a cave rather than a stable.

6.2 Reflections on my methodology, its unique aspects, and its effect on my research.

My methodology of translation between liturgy, iconography and masonry architecture, has enabled this thesis to be the first attempt to explain the practice (*praxis)* of Byzantine masonry architecture through theology. Architecture does not exist without the method whereby it is designed and built. Likewise theology only reaches the target when it is lived. As a method of enquiry I too undertook the subjective experience of fieldwork.

Combining experiential fieldwork with primary theological texts, has been the key to this research. Effective translation of the masons' message only took place if I went back to the root of theology, or philosophy, to interpret the liturgy and iconography. Then, with new insight into liturgy and iconography, I sought analogies for the theology of Dionysios the (pseudo) Areopagite and Maximos the Confessor in Hagia Sophia's cross-domed design of masonry arches, vaults, and domes. I found that the masonry construction methods and the theology of Dionysios and Maximos silently fitted themselves into a clear logic, in harmony with what could have been the masons' experienced (mystagogic) practices. The same principles were found in iconography and liturgy, and began to communicate how theology was consciously embodied in masonry architecture, and vice versa.

My methodology of translating between theory and practice is a form of *ekphrasis,* an ancient and revered aspect of philosophy, *poesis*, and rhetoric whereby one medium of expression, or category of knowledge, is translated into another. To apply it to the three categories of liturgy, iconography, and architecture in Hagia Sophia, Thessaloniki, required me to understand the workings of 'analogy' and its synergy with 'method'. Dionysios' theology, as I have shown, would have used the equivalent terms *theoria* (vision, contemplation) and *mystagogia* (the active path to union with God). Dionysios succinctly explains this dialectic,

> 'Besides, we must also consider this, that the teachings, handed down by the Theologians is two-fold [dual] - [on the] one [hand] secret [spoken away] and mystical [initiatory] - [on] the other [hand], open [apparent] and better known [more knowable] - [on the] one [hand] symbolical and intitiative [mystic]- [on] the other [hand] philosophic and demonstrative; - and the unspoken is intertwined with the spoken.' (Dionysios 1897, p. 113)

He gives us the image of the two hands of a person for whom resolution is

found in the centre, within the heart.[1]

6.3 The perspective resulting from my methodology: a theological context for Hagia Sophia

Since scholars believe the church was constructed during iconoclasm in the 8th century, I expected to find that the iconoclasts had favoured architecture over the visual arts because it was not used in Christian devotions and there was no risk of worshipping it. To the contrary, Maximos' *Mystagogia* confirmed that the architecture of Hagia Sophia was also known to portray an image.[2]

In fact, architecture was one of the mass media which carried the message of Christianity's incarnational theology directly to the people, during the centuries in which the ancient Greco-Roman civillization was re-structured and re-modelled. Architecture's tangible, immersive format was a vital medium in this process, developing with liturgy and the word in *ekphrasis,* during iconoclasm, when the pictorial image was forbidden in public space.

Hagia Sophia's image was crafted with a sophisticated artistry by the architect-masons, using a process of analogy based on Dionysios' *Mystagogia* and his other works; one that includes his theorisation of the 'unlike image'.[3] As an immersive image that includes all the senses, while not denying the visual sense, one must conclude that the architecture of Hagia Sophia had a 'dogmatic and liturgical importance' as significant as that of the icon in the Orthodox church.[4]

Dionysios the (pseudo) Areopagite recommended the 'unlike image' under the title, 'That Divine and Heavenly things are appropriately revealed, even through dissimilar symbols' because,

> … the incongruous elevate our mind more than the similitudes; for there is a likelihood, with regard to the more sublime representations of heavenly things, that we should be led astray, so as to think that the Heavenly Beings are certain creatures with the appearance of gold, and certain men with the appearance of light … (1897, HH II:I, p. 152) ... even an expla-

1. See Chapter 2, (p. 105) Dionysios uses the classical Greek sentence structure, 'on the one hand' and 'on the other hand' (τὴν μὲν ... τὴν δε): ' Ἄλλως τε καὶ τούτο ἐννοῆσαι χρή, τὸ διττὴν είναι τὴν τῶν θεολόγων παράδοσιν, τὴν μὲν ἀπόρρητον καὶ μυστικήν, τὴν δε ἐμφανή καὶ γνωριμοτέραν, καὶ τὴν μὲν συμβολικὴν καὶ τελεστικήν, τὴν δὲ φιλόσοφον καὶ ἀποδεικτικήν' (Dionysios, Epistula IX, 1105D)

2. As I have shown (Ch. 3, pp. 186-187). Maximos the Confessor describes the Church in his Mystagogia (1985, pp. 186-190) as *'an image and figure of God'* (MT:1, p.186); an *'image and figure of the entire world composed of visible and invisible essences'* (ibid. p. 188); of the *'sensible world by itself'* (p. 189); of the human being (anthropos) who is the image and likeness of God (pp. 189-190); and of *'the soul considered by itself'* (p. 190).

3. As I have mentioned in Chapter 4 (pp. 244-245)

4. Ouspensky (1992, p.143 ff.) refers to the icons' dogmatic and liturgical importance.

> nation of one of the dissimilar representations would be sufficient for the accurate description of similar things, after the same fashion. (Ibid. HH XV: VIII, p. 191)

At the same time the creed defines how Christ is in the image of God,

> ... begotten [born, having come into being] not made, consubstantial [*homo-ousios*, of the same being] with the father, through him all things were made... (...γεννηθέντα οὐ ποιηθέντα, ὁμοούσιον τῷ Πατρί, δι' οὗ τὰ πάντα ἐγένετο...) (Chrysostom 2011, pp. 42-43)

The words in Greek which are more abstract and less coloured by the imagery of fathership and sonship, are included here to emphasise 'offspringing' from the being of the 'One who is beyond all', rather than fashioned from some pre-existing material.

In Chapters 4 and 5 of this thesis I mention how the *hyle* in Plato's writings, was changed by Aristotle into the *prima materia* which we equate with 'earth' in its broadest sense, and became the substrate in which the sacred space of the *chora* (χώρα) is opened up.[5] Early Christian theology had to clearly establish that the *hyle* (*prima materia*) is also of God and returns to God. This was unclear in Plato and was not a precept of any mainstream religion of the time except the Hebrew Torah.[6] To dispel any confusion, Philo of Alexandria (20 BC-50 AD) clarified that, 'the matter in which the world was created, was itself created by God', (Wolfson, 1962, p. 308)[7] and that, 'God created space (χώρα) and place (τόπος) simultaneously with bodies (σώματα)' (ibid. p. 309).[8] The 'true image' of the world and of the human being, according to Christian theology, was therefore *homo-ousion*, of the same being as God. This same theology goes to the heart of how the tangible 'image' of arches, domes, vaults, and apses emerge (γεννηθέντα) from the earthen materials of load-bearing masonry via the masons' hands. They emerge without the interference of the masons' desires, but through intrinsic scientific laws such as gravity, the cellular structure of clay earth, the laws of friction, tension, compression, all of which are properties 'per

5. See Ch. 5 (pp. 57-158, and footnotes 7, 8, and 10; p. 178, footnote 53; p. 188) and Ch. 6 (p. 256)

6. '*So likewise it is right that the substance which is to be fitted to recieve frequently over its whole extent that copies of all things intelligible and external should itself, of its own nature, be void of all forms. Wherefore, let us not speak of her that is the Mother and Receptacle of this generated world, which is perceptible by sight and all the senses, by the name of earth or air or fire or water, or any aggregates or contituents thereof: rather, if we describe her as a kind of invisible and unshaped, all-receptive, and in some most perplexing and most baffling way partaking of the intelligible, we shall describe her truly.*' (Plato, Timaeus 51a)

7. *'We thus have in Philo a clear, though indirect, statement that the Platonic "receptacle" or "space," that is, the matter in which the world was created, was itself created by God. When that "receptacle" or "space" was created, God also created in it what Plato calls "copies" or "shapes" or "traces" of the ideal four elements, that is, the matter from which the elements and hence the world were created.'* (Wolfson, 1962, p. 308)

8. See the Introduction to this thesis (Ch. 1 p. 70).

se' (καθ᾽ αυτό) of the single source, God, the ineffable and incomparable. The 'image' of arches, vaults, and domes is therefore *homo-ousion* and would have been considered a 'true image'.

Both the iconophiles and the iconoclasts debated the concept of a work 'made without hands' (*acheiropoieton)*. For both of them, the ineffable, incomparable God had come humbly to earth through love and was 'circumscribed' in the human being as Christ (the anointed one), who was the *chora tou achorytou* (the place of what is beyond place). Now I conclude that during iconoclasm the 'true image' (*eikon*) was recognised and accepted in the category of 'unlike images', as *homo-ousion* (consubstantial, of the same being) and as *acheiropoeiton* (made without hands) because the masons constructed by *anenergesia* (doing while not doing).

If the 'image of Christ' is not only the visual image of his physical person, but includes all the senses, then a more diffuse and inclusive range of what he represented can become his 'image'. Under these conditions, architecture would have been an obvious choice for an image of Christ in a conscious building programme during iconoclasm. This concept of 'unlike image' opened up my methodology of translation from one category to another, so as to provide insights into the masonry methods of Hagia Sophia.

6.4 Insights gained into Hagia Sophia's masonry architecture as a mnemonic topology and mystagogic path, in accordance with theology.

The theoretical proposition that the masons' actions are symbolic as well as practical, and that theology may have provided the *theoria* for their actions in designing and building the church, has produced a simplified and clarified analysis of the church's geometrical 'framework' of proportions. Since everything begins from God as the 'source of all the emanations', ineffable, incomparable, energy in potential, whose place is beyond the world yet within the world, theology tells us to generate the church's plan from the centre. Then all the spaces around it fall into place geometrically. If one also links the masonry construction method to the theology of Dionysios' *Mystagogia*, the masons' work could be interpreted as mystagogic and anagogic.

The masons' anagogic path, as I have shown, builds Hagia Sophia's mnemonic topology from the foundations up to the summit of the dome. The church's masonry architecture then becomes a holistic 'image', experienced with all the senses, for those who come to pray in the *chora* of the church. The architectural *typos* of Hagia Sophia which the masons were building upwards then becomes a mnemonic for the same theological contemplation that we find



FIG. 1 Above: Interior of Hagia Sophia, Thessaloniki from the upper gallery. Photo by author.

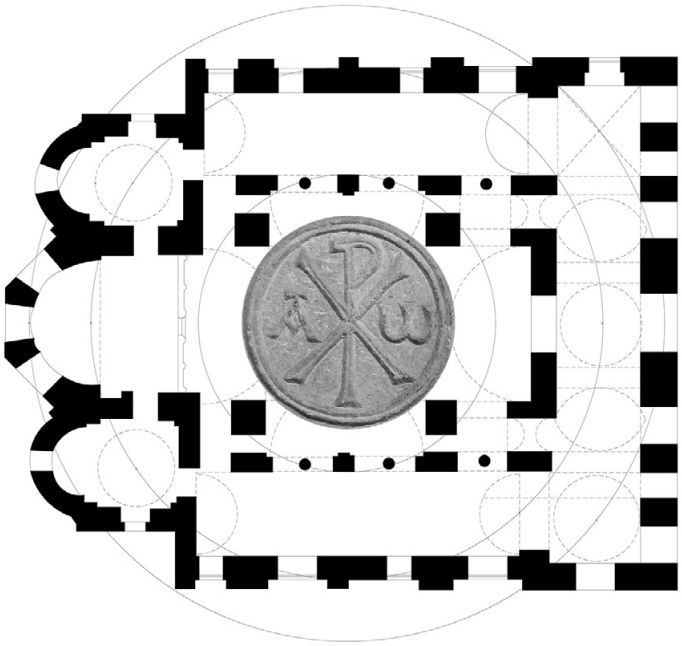
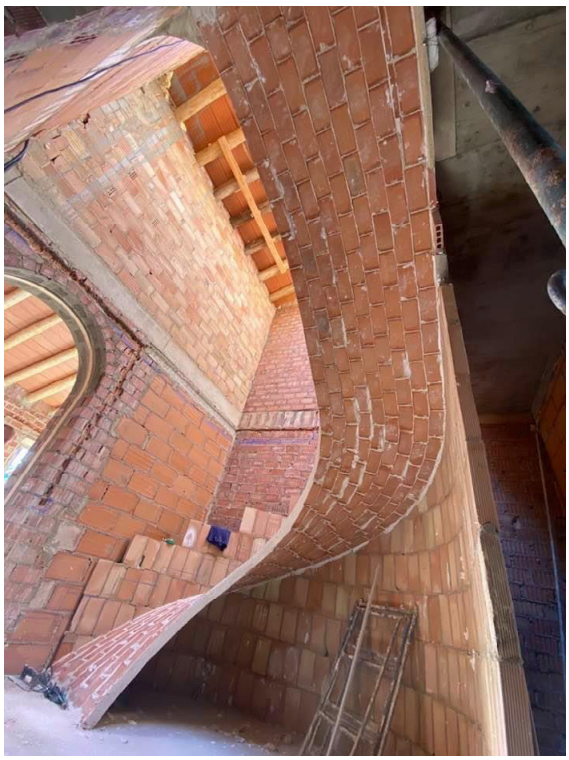


FIG. 2 Left: A reminder of the chi-ro (with alpha and omega) symbol in relation to the chora (XΩPA) of the church. Collage by author.

FIGs. 3 and 4 Below: Catalan masons at work building a spiral staircase. Photos by Andres Flores Castañeda





in iconography and in *ekphrasis*, which notates God's creation of the universe emanating from top to bottom and from centre to perimeter. The *chora* of the church is generated from one central point which then develops as an ascending and descending scale by which the community can travel between the human point of view and God's point of view, and 'acquire the holy spirit' to use St. Seraphim of Sarov's expression.[9]

In Chapter 4, I researched the structure of icons and showed how theology and philosophy give the icon a spatial hierarchy, and how astronomy and cosmology translate into their seemingly natural topography; it is from this background that the figurative scenes emerge. These are presented as *mystagogic* similarly to the ritual of the liturgy.[10] In Chapter 5, I have endeavoured to show that this topography corresponds to the construction phases and design features with which the mason engages in his hands-on journey to practical completion. I offered a version of the masons' experience based on what is known about the methods of construction used in Hagia Sophia, combined with my observations from visits to the cathedral and my years of experience building masonry structures with similar traditional methods.

Dionysios' 'Divine Ray', which brilliantly brought together neo-Platonic philosophy and the Christian *theoria* of 'divine light' to describe God's act of creation, describes how pure potential becomes kinetic energy not only in vertical hierarchy but also in a centralised geometry. Theoretically, a ray or radius can depart from a centre in any direction, projecting a limitless sphericality. Human beings can experience an undifferentiated sphericality but cannot comprehend it unless there is some kind of limit. In the natural spectrum between energy and light there is an 'event horizon' beyond which a circumference is visible like a halo.[11] The circumference is as much an inbuilt part of the concept of the 'divine ray' as the vertical axis. The circumference is its natural product. The work of the masons circumscribed the space of the *chora* around the central point, keeping it always in mind as the guiding principle. Though the masons' journey is literally anagogic during the building of the cathedral, the descent of the Holy Spirit is its purpose and its fruit, and the focus of the mason is on the centre which guides and defines his work building upwards and inwards, while the potential energy moves downwards and outwards.

In the masonry architecture of Hagia Sophia the divine ray emanating from the centre is defined by three axes; west-east between narthex and mysterium,

9. See St. Seraphim of Sarov (2010, pp. 22-24)

10. See Chapter 4, p. 155 of this thesis.

11. cf. Theory of black holes. https://www.theguardian.com/science/2019/apr/10/black-hole-picture-captured-for-first-time-in-space-breakthrough

its crossing north-south to right and left, and the vertical axis between the summit of the dome and the *omphalos* in the earth. These opposing directions of forwards and backwards, left and right, below and above, female and male merged at the centre. The kinetic movement of the 'divine ray' was described theologically as 'oppositions and correspondances' by Dionysios. Through them, the building set up a *chora* in which the levels on the mystagogic path could be experienced.

The masons' practice expresses the fundamental symbol of the chora, the *chi-ro* symbol, by which the earliest followers of Jesus' teachings identified themselves.[12] The letter *X (chi)* looks like a crossing (as we say, 'x marks the spot'); and the letter *P (ro)* is the vertical axis with a curl or drop at the top. To the left and right of this ideogram were placed the alpha and omega, signifying all the letters of the alphabet within a circular circumference. Thus the symbol of the *chi-ro* marks the place in the centre, the place where a human being stands in the cosmos. The space between the centre and the circumference of this symbol contained the alphabet which spelled the divine names. I have shown, by comparison with Foucault's philosophy of similitudes, that this was the space of analogy and of angelic radiations, described by Dionysios in which the *Divine Names* and *Celestial Hierarchies* followed the principles of his *Mystagogia*.

The early Christians of Hagia Sophia described this *chora* as the divine Christ (anointed one). As 'anthropos' he represented the *chora tou achorytou* (Χῶρα τοῦ ἀχῶρητου, place/space of that which cannot be given space/place) within every person for whom the destination was the unified Human being (*theosis*). This *chora* of the church brought forth the figure of the divine human using its architectural qualities which the human subjectively experiences through the physiological directions of his or her human body standing within it.[13] Shade and light, interior and exterior, limitless and limit, open and closed, heavy and light, hot and cold are all experienced qualities that unite within the person who empathises, since all directions converge at the invisible, intangible centre and emanate from it.[14]

12. As described in Chapter 5, the system of six axes appears to be cartesian, yet its Byzantine manifestation is very different when we consider theology. The seventh direction of the 'chi-ro' (the six directional cross) is the direction of the unitary nature of God at the heart of the cross. The number seven was equated with unity because of its geometry which is reached in this church upon construction of the dome on pendentives with its intangible centre.

13. See Chapter 4 for its connection with iconography.

14. See Ch. 5 (pp. 250-251, including footnotes 91 & 92). Dionysios also includes the human emotional qualities, 'what are the Divine forms? - what the Divine appearances, and parts and organs? - what the Divine places and ornaments? - what the angers? - what the griefs? - and the Divine wrath? - what the carousals, and the ensuing sicknesses? - what the oaths, - and what the surses? - that the sleepings, and what the awakings? - and all the other divinely formed represeantsions, which belong to the description of God, through symbols.' (Dionysios,

When a person steps into the *chora* of such a church, the abstract figures of its theology, philosophy, and astronomy, along with the more material ones of cosmology, landscape, and holy persons, enter their subjective realm without conscious effort.[15] The unique property of architecture is that when a person stands in its space, the image (*eikon*) that they experience with all their senses automatically enters their subjective world, through an almost unconscious empathy. It is comparable to standing in the natural environment, where a human being is positioned in the cosmos.

Hagia Sophia was built in harmony with timeless universal principles, commonly called the laws of nature, through the masons' total attunment to his timeless 'earthly material'.[16] Because its bricks and stones naturally form the arches, vaults, and domes that spring from the inner qualities of the earth without the masons' will, the masonry architecture of Hagia Sophia could therefore claim to be *homo-ousion,* as an 'unlike image', without even needing to enter the subjective realm. And when the subject can step out of the way, as we saw from Plotinus and Dionysios words, then God is left in that central place.[17]

The mason is always aware of the pull of the focal place at the centre of the circle and at some point he will simply be in tune with what it demands, his hands will be its hands and he will acquire a sensation of weightlessness, and of simply observing. At this point there is no other will than that of the centre. His method of ascent is simultaneously the creation of a descent of his soul to earth by stripping away all illusory expectations acquired through an independent sense of self. The path, the method of the mason, is both a kind of ritual similar to that of the liturgy and it is also an action in real time with a practical purpose and a response to conditions of the world around them. Therefore it also has potential for revelation of divine will. If it is regarded as a ritual, it can be called an analogy and a mystagogic learning process. And if it is considered revelatory it must be deemed an action that is taken in the moment, in submission to the divine will in the entire creation according to its need. The latter constitute

1897, MT, III:1, p. 92)

15. As I showed in Chapter 4, the icons were not considered to be 'of the same substance/being' (homo-ousion) as their prototypes. Only when a system of representation was devised whereby their figures came forward from the picture plane and entered the subjective world of the contemplator as pure light, were they considered acceptable. Similarly, I have explained that the text of a holy book had to be read aloud with the breath of the reader for the vibration of sound to enter the subjective experience and provide guidance.

16. See the masons' inteviews in the Appendix to this thesis, for comments on their relationship with their material, the stone or brick.

17. See Chapter 2 (p. 127), 'an ecstasy and giving up of the self' ('ἔκστασις καὶ ἅπλωσις καὶ ἐπίδοσις αὐτου', (Plotinus VI. 9.11.23); and our whole selves standing outside of our whole selves [ὅλους ἑαυτοὺς ὅλων ἑαυτων ἑξισταμένους] and our whole [selves] becoming of God (Dionysios DN VIL1, 865D-868A)

FIG. 3 Top Right: 'Delicate Arch' natural rock arch formation, Arches National Park, Utah, USA.
Source: https://www.outsidenomad.com/arches-national-park/

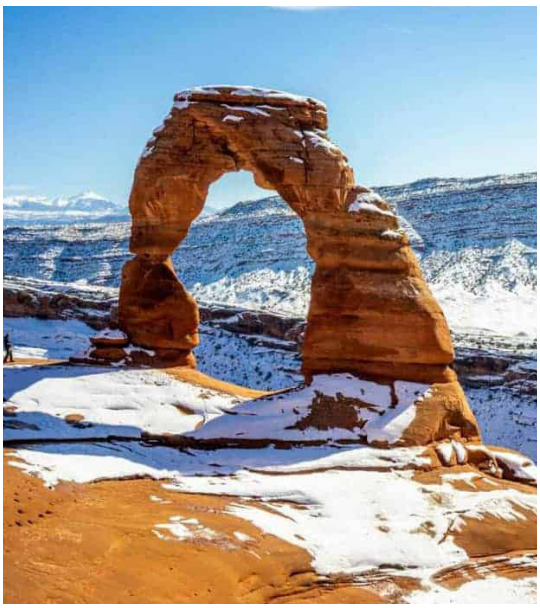


FIG. 4 Middle: Gravity and form experienced by students, connecting the senses with earth's timeless message, workshop in Monroyo, Spain. *Photo by author.*





FIG. 5 Bottom right: Sandcastle abbey on the beach sustained by gravity and friction of sand grains. Timeless forms in harmony with earth.

the 'laws' of its construction such as laws of physics, of gravity and material properties. Therefore there was a mystagogy to the masons' work that is easily harmonious with the other two categories of liturgy and iconography.

If we see Hagia Sophia, that is built from the earth, as the un-like image of a human that is created from earth, out of the 'dust of the earth' ('*apar min-ha'adamah*': Genesis 2:7), as a human where male and female together were called Adam (Genesis 5:1-2) then we can understand that the early Christians were creating a vision of the human unified with God at the heart of their empire through their masonry architecture in the 6th-9th century. During the research work of this thesis I have understood that the Hagia Sophia, as the un-like image of a divine human, was a mnemonic for the path that a community must take to recognise their divine right of unity with earth and with God, just as we have seen the masons become one with their earthen materials. Hagia Sophia's architectural image is the instructions on how to become a person whose works and words are *acheiropoeiton*, and whose life is lived in a state of *anenergesia*. If the early Christians understood Jesus' teaching of the bread and wine being the divine body and blood, and gave thanks in the liturgy, it follows that their masons would have understood that the earth is alive and breathes with the Holy Spirit. Then the church building too becomes a sacrament, built with the humility and love of the masons, with hands that were not their hands, who reached a state of doing while not doing (*anenergesia*). The building and the city become the sacrament in which the people stand and empathise with all their senses, entraining them in the similitude of sympathy. To me this understanding is required for a sustainable future in which the earth itself is a sacrament, the body of God, and is in fact God in projection. It brings us guidance for creating sustainable communities in harmony with the earth, of the earth, and in fact being the earth.

6.5 Implications of this research in current and future architectural design and practice.

The analogies and methods, *theoria* and *mystagogia*, discovered through the research of this thesis constitute a vision of *techne* and *poiesis* that could contribute to a sustainable urbanism in harmony with nature. Symbolic theology relates that when God brings the world into being it is generated from God's own being, and remains his subjective being in projection. This gives us an insight into the word *poiesis* from which we derive the words poet and poetry and offers profound guidance on the act of 'making' in human civillization. As long as we have a theology that connects the senses, the mind, and the ineffable One (God) with logic, then the human senses could learn to connect to the human heart

FIG. 6 Top Right: Detail of brick dome, Hesperia Museum, Hesperia, California.



FIG. 7 Below: Student researchers of high aggregate lime plaster, Monroyo, Spain.

FIG. 8 Mid-Right: The earth in the hand of the mason.









FIG. 9 Above: Architecture students learn dome and vaulting techniques, Canning Town, London.

FIG. 10 Bottom Left: Innovative exterior render with sunflower and parinted flower, Cal-Earth, California.

All photos by author.

and mind as one without interruptions in 'transmission'.[18] If this were our focus, *Sophia Theou*, the wisdom of God, may have another chance to live in community, perhaps this time a sustainable one.

That being said, if this thesis is to be exemplary of a sustainable way of 'making' its terms must be relevant to our 21st century civillization. Today our needs and capacities are different than the 8th century; we have problems like climate change, pollution, industrialisation, dehumanisation of large segments of the world's population, cancer, and other diseases that reflect the breakdown of the healthy natural order; we have greatly expanded science and technology, mass communications, roles for women, physical and social mobility. A further work of translation is required to integrate the symbols of today into a methodology like that of Dionysios' *mystagogia*, where the timeless questions about God, the human being, and the universes remain the focus. These are the timeless context that we share with the 8th century, and it is with respect to these that the fruits of this thesis could be transferable to the new contingencies. It is the timeless lessons of this thesis that are of value to our 21st century context.

The divine essence in this world promotes communion whereas war is our wayward illusion. The divine unity promotes an architecture in harmony with the natural environment; it is our wayward illusion to believe that we must fight with the force of gravity when we construct a simple home, or that a simple home cannot provide us the required shelter without plundering the depth of the earth and burning fossil fuels. The divine order of the universe, the divine unity of which we are living proof freely creates all the conditions in which to build a sustainable lifestyle, in sustainable cities, in peace with all other human beings. But the condition is that we, as humans, learn how to act in harmony with that divine unity. Then all our product will also be sustainable. Our life and works will be *acheiropoeiton*, 'work made without hands', and our life in community will be lived with *anenergesia* in the surrendered state of 'doing while not doing'.

Thus the first and foremost lesson to take from this specific historical study in the context of 8th century Thessaloniki, is that we must put in place practices which guide the human being to *anenergesia* and so that our works in the world, including our technologies, buildings, and cities, will be *acheiropeiton*. Of these methods that we must put in place as humanity, some paths can pick up the historic traces of the apprenticeship systems of 'making' such as I have described in masonry architecture. An apprenticeship system in 'making' has both the guidance for the person to reach one-ness (*henosis)* and also has a useful product.

18. See Ch. 2, p. 99

FIG. 11 Left: Students of natural building learn uncentered Catalan vaulting, with gypsum and lime mortar, directly from the mason, at Domoterra, Monroyo, Spain. *Photo by author.*





FIG. 12 Right: Detail of gypsum layer of Catalan uncentered vaulting. *Photo by author.*

FIG. 13 Below: Students completing their first Catalan vault, Domoterra, Monroyo, Spain.
Photo by author.



This might be a practical way to start since these have a tried and tested precedent. However, there are many paths more than these. One cannot say that 'making' is the only path that has a useful product, all paths do in fact have a kind of 'useful product'. The purely contemplative path may result in the person of a saint whose prayers in the world are a priceless product, but since it is not possible for every human being to withdraw from the world, the majority of humans must learn to withdraw (the *apophatic* principle) within an active lifestyle. Perhaps it may be considered contrary to the apophatic way to include an objective product like a building, and yet what I have tried to show in this historically-based thesis on an exemplary 8th century Byzantine cathedral is that the building can become part of the path.

In a very tangible way, the research in this thesis can provide the basis for a new, or re-newed, type of education of the architect as a student, practitioner, or master builder. Architectural education today fosters the architect's intuitive expression almost exclusively through digital and graphic media. Students of architecture have been deprived of the opportunity to interact hands-on with the world, using all their senses. In this unique moment in history there is an opportunity for a curriculum that includes theory (*theoria)* and practice (*praktike)*, analogy and method; a 21st century version of 'learning the ropes' that combines digital and theoretical learning with hands-on masonry construction. This situation is precipitated by humanity needing to respond to the global environmental crisis while simultaneously developing the new 3-D robotic construction (3-D printing) of buildings that has brought the art of building with fluid masonry materials of the earth into the centre stage of a digital future. If such a curriculum were in place, it would train architects who would be able to intuitively understand the art of digital printing as an analogy for 'doing while not doing', an art to teach us about the 'spiritual world' rather than being in thrall to technology. The architect or engineer (*mechanikos*) in training would know that the machine does not do all this by itself, but is an interface between the divine laws of creation and the human designer of its softwares and outputs.[19]

To succeed in the conscious development of the student as a person through such a curriculum, the teachers must themelves have learned a combination of theory and hands-on practice, with a focus on the connection of seen and unseen, tangible and intangible. This could result in a slow start to such a programme, however it would be the only way to succeed and sustain. The fruit of guiding the student towards the fundamental principles of *anenergesia* 'doing while not doing' and work that is *acheiropoeiton* 'made without hands' is well worth cultivation of this field.

19. Much as the icon is an interface.



FIG. 14 Above: Article comparing hand built coils (Eco-Dome) and designs for digital printing. (The designer of the digital one has not yet had hands-on experience of building). Source: www.arquitecturamashistoria.blogspot.com



FIG. 15 Left: Digitally printed offices of 'Constructions 3-D', Valenciennes, France. Robotic arm.
Photo by author.





FIG. 16 Below: Learning by hand, students build clay coil structures and modular design. Photo by author.

FIG. 17 Below left: Constructions 3-D digitally printing their offices, Valenciennes, France.
Photo by author.

This thesis can also help practising architects to undertake a new role combining the work of architect and project manager. A closer combination of designing and constructing, along the 'constructive lines' of masonry architecture would ground him or her in 'the real world' and bring a deeper sense of purpose to their work. Under the right circumstances of good guidance, this could also offer architects a path to union (*henosis)*. The masonry methods outlined in this thesis, in the context of digital printing and the needs and capacities of the 21st century, could help architects to develop a sustainable architecture 'in harmony with nature', or to more specific, in harmony with the divine will incarnate in the earth, which might also be called 'holy spiritual'. It could give the profession the project of re-learning a 'holy-spiritual' architectural language, with the help of masonry architecture. For the architect, a design language of timeless principles such as we see in Dionysios' *mystagogia*, combines a system of learning to live in harmony with the divine, while not abandoning the western world's active and creative way of life. The path of the mason as builder of masonry arches, vaults, and domes, is exemplary in training one towards union (*henosis)* in an active job. As Ouspensky (2002, p. 184) writes,

> 'Thus the icon of a saint does not fail to indicate his occupation in the world, which he was able to turn into a spiritual activity, whether an ecclesiastic occupation such as that of a bishop or a monk, or a worldly activity, such as that of a prince, a soldier or a physician.'

Hopefully, to this worldly list of 'a prince, a soldier or a physician' one might add the architect and Master builder, the craftsman, the engineer, the technician and inventor in the 21st century.

For the contemporary masons, the majority of whom are building houses, apartments, light industrial buildings, warehouses, farm buildings, shops, small offices and the like, there could be a more conscious understanding of their work and a closer relationship with architects. Using self-supporting load-bearing masonry methods originating well before the construction of Hagia Sophia in Thessaloniki, traditional masons are still working within a living tradition in Iran, in Spain, Morocco and Egypt, and in Mexico.[20] The path of the mason that I have attempted to extract from the 'Rosetta Stone' of Hagia Sophia in Thessaloniki, has always been a combination of both person and product. It may be argued that there is a temptation to invest the product with personal desires, just as the iconoclasts 'presented the artist as a dangerous and deceptive figure ... this deception was enacted by an individualized artisan working for personal gain' (Barber,

20. In the USA the techniques which were popularised in the early 20th century by the Catalan mason Guastavino are being revived through the MIT engineering faculty. Cambridge university in the UK has also had an adjunct programme of hands-on masonry architecture for some years, which is linking to a new course in material science.

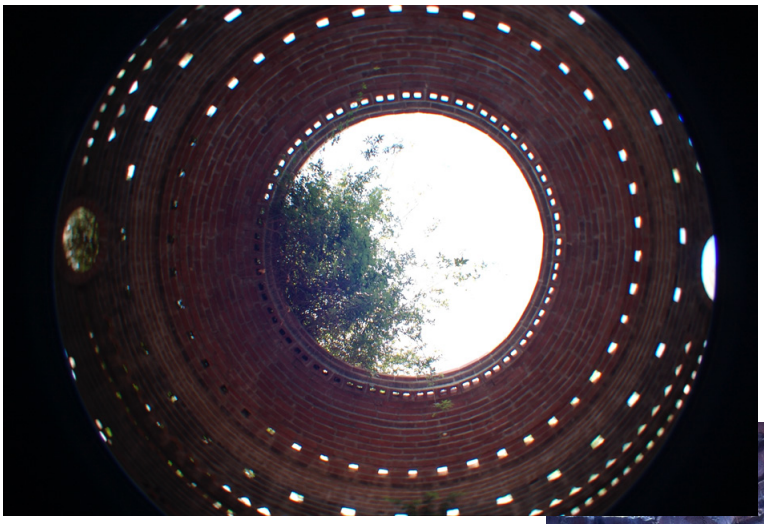
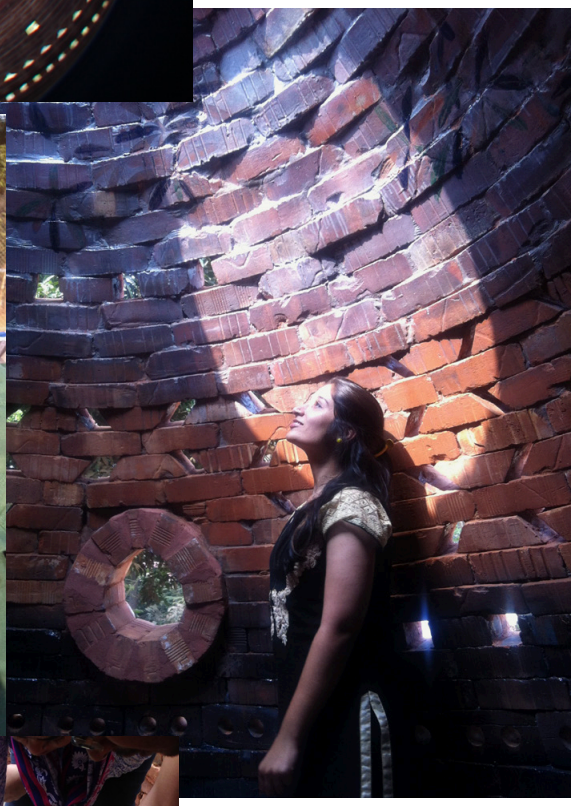


FIG. 17 Left: Brick dome built by architecture students and course participants, Cal-Earth Institute, California, USA.
Photo Cal-Earth Institute.

FIG. 18 Below: Ceramic Dome Tagore completed with glaze firing, Kala Bhavana, Santiniketan, West Bengal.
Photo by author.







FIGs. 19 and 20 Above and right: Students of Sculpture, fine arts, and ceramics, learn masonry dome techniques with large aggregate (dry-pack), Santiniketan, West Bengal, India
Photo by author.



FIG. 21 Bottom Right: Architects, engineers, and course participants learn masonry dome techniques with central chain compass. Bengal Institute, Dhaka, Bangladesh.
Photo by author.

2002, p. 112). However, in this thesis I have argued that there is an *orthopraxy* to the art of masonry architecture, which has proved itself to be one of the most ancient and stable in its transmission throughout the centuries. The masons' relationship with matter requires truthfulness of themselves. Thus masonry architecture, which today includes 3-D printing and poured concrete, can provide a symbolic language transmitted by the architect or Master mason, whose 'true image' is derived from the material itself and is always *homo-ousion* (of the same being as God). For a sustainable architecture to grow out of the work of this thesis therefore, the masons' methods (their *orthopraxy*) must not be seperated from the creation of the product, as a principle. Or to put it another way, to bring the fruits of this thesis on a historical building in the context of its historical liturgy, iconography, theology, and all the other social factors of the 8th century, into the 21st century, it would be necessary to keep the the union of the person with God in central place. This union, like the masons' compass, would need to be a stable element in order for the art and the profession of architecture to be constructed around it. In fact, this *henosis* must be the focus of any of the creative technologies, and of human actions in the world, if we are to build a sustainable urbanism in harmony with the divine design of the universe.

The theology and philosophy which has informed this thesis, albeit selectively to my goal of understanding masonry architecture, brought our understanding of the human being into harmony with the earth and with God, as a human being at one with the divine (*henosis or theosis*). It also defined this human being as a community and verified that the earth too is the precious divine body. This in itself implies a sustainable way of life and the possibility of a sustainable urbanism. Admittedly there seems a long way to go from the architecture of a civillization which lacks the humility and love to acknowledge our earthly place in a universe not made by our hands. The good news, though, is that in the 21st century, there is a practical basis from which such a vision could grow, nourished by 21st century circumstances such as the potential of grassroots education via mass media, the greater capacity for DIY construction with middle-income funds, the increasing availability of robotic construction to local small companies or start-up companies, the potential of crowd funding, and by trading useless visits to the gym to contribute 'sweat equity'.

In the present positivist paradigm where ideas are only trusted if they can be measured with the outer senses, masonry optimistically provides a scientific method based on sensory knowledge which nevertheless can guide a person to connect the body with the heart and mind. It provides a tangible scientific logic best expressed by Maximos (1985, MT: V, p. 194),

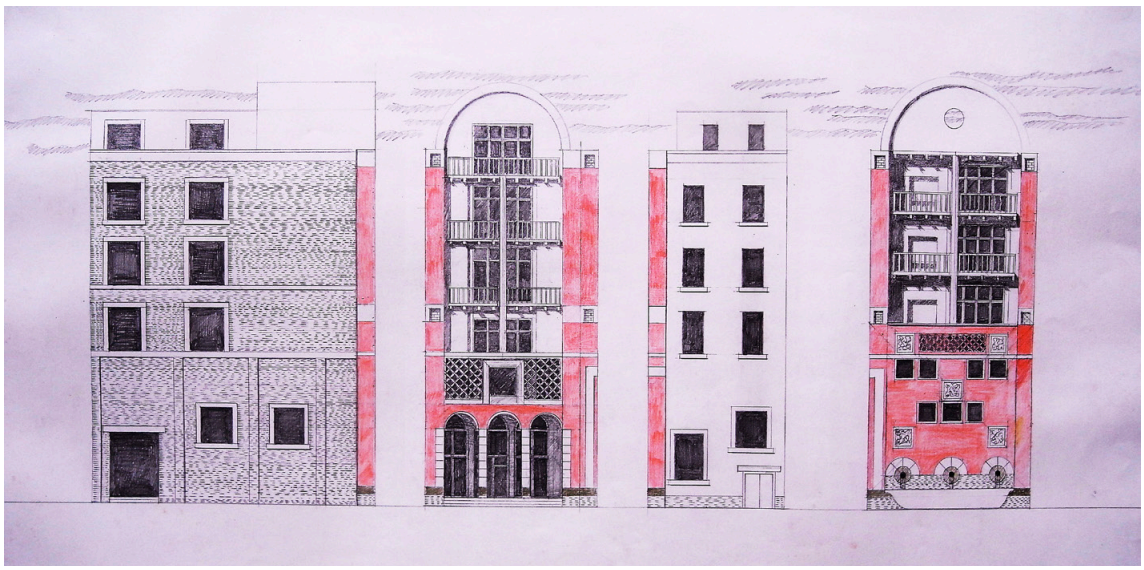


FIG. 22 Above: Apartment block design for mixed robotic and hands-on construction, Milan. *Drawing by author.*

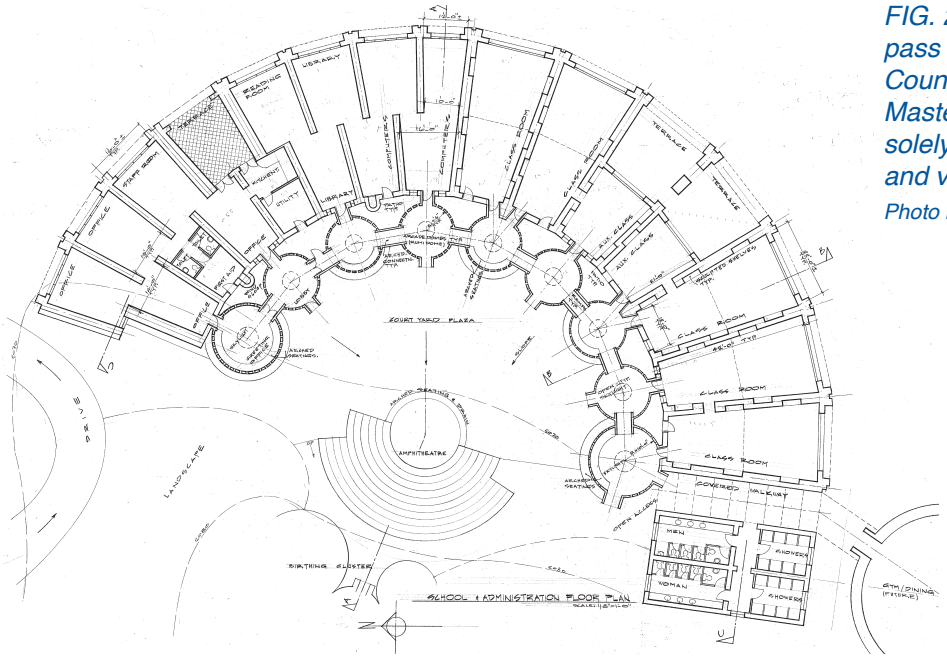


FIG. 23 Left: Encompass School, Tulare County, California. Master plan design solely with domes and vaults. *Photo by author.*



FIG. 24 Bottom: Manara academy master plan, Leicester. Design for mixed robotic and hands-on construction with domes and vaults, *Image by author.*

> From these is produced the inward relationship to the truth and the good, that is, to God, which he used to call Divine Science, secure knowledge, love, and peace, in which and by means of which there is deification. This whole reality is science because it is the achievement of all knowledge concerning God and divine realities and virtues that is accessible to men [*anthropos*, humans]. It is knowledge because it genuinely lays hold of the truth and offers a lasting experience of God. It is love because it shares in its whole disposition the full happiness of God.

The masons who today are still living their traditional art, making useful products of buildings, do not generally speak about their experience and few seem aware that it could contain a structured mystagogy, but they continue to practice the construction methods and train apprentices. Most will tell of their strong love and connection to their earthly material and to spiritual feelings for their work and fellow builders. Their estrangement from architects may have a chance to lessen as the new 3-D printing technology is bringing back an interest among architects for designing with load-bearing, earthen materials which, by nature, will connect into the mystagogy I have researched in this thesis. This is in large part due to bringing the principles of load-bearing masonry into the machine age with commercial promise. It may be bringing a unique moment in time that makes it possible to introduce theology and philosophy as a hands-on meditation within a design system for architects through these existing building methods.

Though there is much work to do, masonry architecture could set a precedent for design and production techniques that are 'made without hands' (*acheiropoeiton*), which through participatory education could bring human beings to their birthright as enlightened beings. Many creative working activities can entrain the 'doer' on the journey from self to other, up and down the ladder, as it were. Such techniques and methods could be called sustainable technologies because technically sustainable results could be derived from training human beings to change from me-centered to you-centered thinking. These would shift our focus from seeking material gain to a sense of limitless abundance when one listens to the material resource and works in harmony with it, becoming 'as having nothing, and yet possessing all things'. (2 Corinthains 6:10 NKJV). These, too, could provide meaningful employment. Human activity, such as building a city, but not limited to it, could provide an image of a collective humanity that is in harmony with the natural, divine order of things. Thus persons in other lines of work may also be able to take the masonry mystagogia as a basis for other kinds of making (*poiesis*). Transferring the masonry mystagogia, in all its analogous connections with the *apophatic* and *kataphatic* mystagogia of St. Dionysios, with the divine names and qualities in creation, would require



FIG. 25 Above: 'Ceramic Dome Tagore', built by students of ceramics and fine arts, University of Visva Bharati, Santiniketan, West Bengal, India. The person experiencing the divine qualities of the space of radiations. Photo by author.

research and development in real time product-and-person generating situations. These might, for example, be embodied in the work of a start-up company as the young members brainstrom and research their way towards a sustainable product for humanity. They might be embodied in protocols of relationships, analogies, creative brainstorming, and tangible making, directed towards a more sustainble lifestyle and in a way that remembers the Divine unity.[21]

The *mystagogia* presented in this thesis, that draws its methods from Dionysios' *apophatic* and *kataphatic* theology, could lead to systems of consciously designing with divine names and material qualities, brought as conscious analogies for the unseen. This could inform a system of architectural design and a vocabulary of architectural elements and qualities. The example of Hagia Sophia shows us how such a design language could be part of a system of spirituality connected to daily life, becasue ultimately his Mystagogia is a method of daily meditation, applicable to everyday day life. Therefore it might also provide a method for a person to simply inhabit and appreciate their lifespace day to day, raising a family, cooking meals, repairing their home, looking after the aged, paying the bills and all of life's mundane details. The divine landscape is not limited to either cathedrals or natural landscapes, but can be percieved in homes and schools, offices, and factories. It is part of our birthright and is the natural habitat for the soul because, 'Home is where the heart is.' As St. Macarius (the Egyptian) wrote: (2014, p. 114)

> Grace itself writes upon their hearts the laws of the Spirit. They ought not therefore to rest their assurance only upon the scriptures that are written in ink; the grace of God writes the laws of the Spirit and the mysteries of heaven upon the tables of the heart as well. For the heart governs and reigns over the whole bodily organism; and when grace possesses the ranges of the heart, it reigns over all the members and the thoughts. For there, in the heart, is the mind, and all the faculties of the soul, and its expectation; therefore grace penetrates also to all the members of the body.

I hope that this thesis is a small contribution to a path that includes the practical hands-on building of a city's much needed architecture. The path that the 'Rosetta stone' of Hagia Sophia describes is a masonry mnemonic, as concise as a rosary and as potent as a prayer. It is an ancient path that many have trod before. It is a path that insistently indicates a way to go there, to the real 'home for the soul'.

21. cf. Gordon, W. (1963) ***Synectics: The Development of Creative Capacity,*** New York: Harper and Row

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Glossary of Terms:

This glossary is mainly intended to give the reader an insight into the Greek etymology of many of the following words, so as to better understand the meanings in the original texts, and to overcome the change of meaning that has occurred as they passed into western Europe and became tailored to the evolving culture of the last millenia.

Words that are a direct transliteration from the Greek have been written in italics. Some words of Greek origin that have entered common use and are considered part of the English language have not been italicised. Others words which were also commonly used in Latin, and are thus in use in English, have also not been italicised.

The following terms have been used frequently in this thesis and merit some explanation:

Acheiropoieton - Acheiropoieta (Medieval Greek: ἀχειροποίητα, "made without hand"; singular acheiropoieton), also called Images Made Without Hands (and variants), are said to have come into existence by divine agency; not created by a human. The term is used of icons and copies of an original created by divine agency. Certain images of Jesus or the Virgin Mary, that are credited by tradition among the faithful are, in the Eastern church the imprint on the Mandylion, also known as the Image of Edessa, and the Hodegetria (Virgin and child) painted by St. Luke, several Russian icons, and in the West the Shroud of Turin, Veil of Veronica, Our Lady of Guadalupe, and Manoppello Image. Although the most famous acheiropoieta today are mostly icons in paint on wood panel, they exist with other media such as mosaics, painted tile, and cloth. The belief in such images becomes prominent in the 6th century, by the end of which both the Mandylion and the Image of Camuliana were well known. The pilgrim Antoninus of Piacenza was shown a relic of the Veil of Veronica type in Memphis, Egypt in the 570s.

Aisle - A passage or walkway; a pair of walkways that are parallel to the primary public space in the church. In churches aisles were often separated from the central public areas by columns, piers, or low dividing walls/chancels.

Anafora - or anaphora is a Greek word (ἀναφορά) meaning a "carrying up" (much as metaphora literally means "carrying across"). In general anafora means that one thing "refers up" to another in a hierarchy. Thus in mystagogic terms it means an "offering", hence its use in reference to the offering of sacrifice to God. In the sacrificial language of the Greek version of the Old Testament known as the Septuagint, prosferein (προσφέρειν) is used of the offerer's bringing the victim to the altar, and anaferein (ἀναφέρειν) is used of the anafora, the priest's offering up to God of the selected portion upon the altar (see, for instance, Leviticus 2:14, 2:16, 3:1, 3:5). The eucharistic anafora pertains to the offering up of the blessed bread and wine on the altar (the sacramental symbols), which "refer up" to the body and blood of Christ (the prototype). It implies a bloodless sacrifice offering repentance, prayer, and recieving blessings.

Anagogy - sometimes spelled anagoge, is a Greek word (ἀναγωγή) literally means being led upwards or going up. It suggests a "climb" or "ascent", referring to the path of the intitate in the approach to God. Unlike the word mystagogy, which has a sense of being led beyond words and beyond the nous, anagogy includes the effort of the climb in which the egoic, reasoning mind must still make effort. Certain medieval theologians describe four methods of interpreting the scriptures: literal/historical, tropological, allegorical, and anagogical. Hugh of St. Victor, in De scripturis et scriptoribus sacris, distinguished anagoge, as a "reasoning upwards" (sursum ductio), when from the visible, the invisible action is disclosed or revealed. The four methods of interpretation point in four different directions: The literal/historical backwards to the past, the allegoric forwards to the future, the tropological downwards to the moral/human, and the anagogic upwards to the spiritual/heavenly.

Analipsis - ἡ ἀνάληψις , gerund or verbal noun of ἀναλαμβάνω, to "take up", also known as the Ascension in Latin. It is the event of Christ's life after death when he was 'taken up into God', which occured 40 days after the resurrection. The celebration of the Analipsis (Ascension) is a major feast day of the Christian liturgical year. The ascension was originally part of Pentecost (the coming of the Holy Spirit on the disciples), and developed as a separate celebration only slowly from the late 4th century onward.

Anamnesis - Anamnesis (from the Attic Greek word ἀναμνήσις meaning "remembrance") in Christianity is a liturgical statement in which the Eucharist, and the Passion, Resurrection and Ascension of Christ guide in the remembrace of God. It has its origin in Jesus' words at the Last Supper, "Do this in memory of me" (Greek: "τοῦτο ποιεῖτε εἰς τὴν ἐμὴν ἀνάμνησιν", (Luke 22:19, 1 Corinthians 11:24–25). In a wider sense, anamnesis is a key concept in which the faithful recall God's presence. This memorial aspect is not simply a passive process but one by which the Christian enters actively into the mysteries. The epithet "ana-" is shared by the words anafora, anagogy, and anamnesis implying an upward direction to the action, in this case of memory. Almost all eucharistic prayers (or anaphoras) contain an anamnesis.

Anenergesia - is a state that has been translated as 'complete passivity', but to better understand this word it can be broken down into its constituent parts: an - not, en - in, ergesia - work, kinetic energy; energesia as one word, then, means energy that is generated from within onself, thus anenergesia means energy that is not generated from within oneself, hence the 'work not made by hands' having the meaning of work done by God.

Angel - ἄγγελος, ὁ, ἡ, in Greek, meaning a messenger, one sent, generally, one that announces or tells, semi-divine being an angel, an aspect of divine communication, heavenly being, attendant upon God and employed as his messenger to men, to make known his purposes.

Anthropos - ἄνθρωπος is Greek for human being, person. Anthropos may also refer in Gnosticism to the first human being, also referred to as Adamas (from Hebrew meaning earth). The noun ἄνθρωπος (anthropos) "human being, person" takes masculine case endings even when that person is female, and

when it is not known whether a man or a woman is referenced. Frequently used in plural for mixed groups of men and women, or for men alone, or women alone.

Apophatic - from Greek apophatikos 'negative', apophasis 'denial', from apo- 'away' + -phanai 'speak'. Used of knowledge of God obtained through negating concepts that might be applied to him. Apophatic theology, also known as negative theology, is a form of theological thinking and religious practice which approaches God by negation, to speak only in terms of what may not be said about the ineffable perfect goodness that is God. It forms a pair together with cataphatic theology, which approaches God by affirmations or positive statements about what God is.

Apse - A geometric rounded form like a half dome, usually surmounting curved or polygonal walls. In a Christian basilican or domed church the main apse is located at the east end of the building opposite the main entrance and the narthex, often flanked by secondary apses. An apse is built starting with a horizontal arc and building upwards, usually with inclined arches.

Archetype - the original form or figure from which examples derive. In philosophy, theology, and psychology, archetypes are beyond time and space, having certain abstract qualities. The word archetype, "original pattern from which copies are made," first entered into English usage in the 1540s. It derives from the Latin noun archetypum, latinisation of the Greek noun ἀρχέτυπον (archétypon), whose adjective form is archétypos (ἀρχέτυπος), which means "first-molded", which is a compound of archḗ (ἀρχή), "beginning, origin", and týpos (τύπος), "imprint", "pattern", "model", or "type". It thus refers to the origin of a type. An archetype may give rise to one or more prototypes, which in turn may give rise to one or more copies.

Architekton - lit. the 'primary builder', was also the Master mason (*maistor* or *proto-maistor*) in late Roman and Byzantine times. The *architekton* was in charge of the building site and also designed the building within the traditional, known formulas used by the masons. If something more innovative was required, such as emperor Justinian's design of Hagia Sophia, Constantinople, then a mathematician or engineer (*mechanikos*) was hired.

Bema - The Ancient Greek bēma (βῆμα) means both 'step', and 'raised platform', a place or tribune from which men spoke in a public assembly, an orator's podium. The ceremonial use of a bema in Judaism carried over into early Christian church architecture. It was originally a raised platform with a lectern and seats for the clergy, from which lessons from the Scriptures were read and the sermon was delivered.In Eastern Christianity 'bema' generally refers to the raised area of the sanctuary; it consists of both the area behind the iconostasion and the platform in front of it from which the deacon leads the ektenias (litanies) together with the ambo from which the priest delivers the sermon and distributes Holy Communion. It may be approached by one or several steps. The bema is composed of the altar (the area behind the iconostasion), the soleas (the pathway in front of the iconostasion), and the ambo (the area in front of the Holy Doors which projects westward into the nave).

Boulouki - A masons' guild or team of masons who work together.

Buttress - A heavy masonry mass such as a pier or wall which counterbalances horizontal pressure coming from another part of the structure or from earthquake, wind, or ground settlement. A buttress commonly conterbalances the outward thrust coming from a roof or floor, such as from masonry vaults and domes. A building may resolve its buttressing needs using design; for example aisles and apses buttress an adjoining dome. Buttresses may be added after construction to prevent collapse and redistribute horizontal forces, such as at Hagia Sophia, Constantinople. A buttress converts tensile forces into compression, bringing them safely down to the ground.

Canon - The canon may have originaly been a yard-stick used for measurement. Today a Canon, Qanon, or Kanon, means that which conforms to a general rule or acceptable procedure; canonical: relating to, or forming an exemplary pattern. In the orthodox church it also refers to hymns which incorporate the measure of musical scales and repeating series of notes. The Kanon became the standard for liturgial expression, and was formed of nine odes.

Cathedral - The home church of a Bishop, which contains the *cathedra* or bishop's chair. The cathedral is therefore the focal church for the Bishop's flock, thus being the main church of a city, or a city district. A cathedral church may be of any size but is often larger, with a larger congregation. A cathedral is not a shrine of mausoleum, although aspects of these can inform the identity of a cathedral, such as the relics of a saint or distinguished persons.

Centering - is a temporary formwork, usually of wood, upon which the stones or bricks of an arch or vault are laid during construction. Centering keeps the voussoirs in their correct relative positions until the keystone is placed completing the arch, after which the centering may be removed.

Chi-ro - pronounciation of the Christian ideogramme composed of the letters X (chi) and P (ro), associated with the name Christos, the anointed one, for Christ. The author suggests a connection with the name of Khirokitia neolithic archaeological site in Kitium district, Cyprus, where the stone bases of what are thought to have been domed tholoi are clustered.

Ciborion - In ecclesiastical architecture, a ciborium [Lat.], kiborion (κιβώριον) [Gr.], is a canopy or covering supported by columns. The ciborium arose in the context of a wide range of canopies, both honorific and practical, used in the ancient world to both frame and shelter important persons and religious images or objects. Early ciboria were like a tent with curtains hanging from rods between four columns. Some were temporary and portable using poles and textile hangings, and others were permanent structures in stone, metal etc. Roman emperors were often shown underneath a ciborium, also called an aedicula, meaning 'small dwelling,' or 'shrine'. In churches cibora are usually freestanding over the altar in the sanctuary, or in the nave as a place to enshrine the gospels. They are also used to sancitfy the appearance of a holy person, or indicate the holiness of a thing like a holy spring, a font, the gospel book, a tomb, and icon.

Choir - The part of the church dedicated for use by the choir. In the basilican church the choir is usually beyond the nave or to one side. The area may be higher than the level of the nave. The name choir is used because traditionally the priests and deacons of the Cathedral stood here as a chorus, chanting or singing during the responsive portion of Divine Liturgies.

Chora - Khôra (also chora; Ancient Greek: χώρα) was the name given to the territory of the Ancient Greek polis outside the city proper. It is also the name for the town itself, which is defined by its main plaza. From the verb χωρ-έω - make room for another, give way, withdraw. The term has been used in philosophy by Plato to designate a receptacle (as a "third kind" [triton genos]; Timaeus 48e4), a space, a material substratum, or an interval. In Plato's account, khôra is described as a formless interval, alike to a non-being, in between which the "Forms" were received from the intelligible realm (where they were originally held) and were "copied", shaping into the transitory forms of the sensible realm; it "gives space" and has maternal overtones (a womb, matrix). It becomes an epithet for the Holy Mother as "chora tou achorytou" - container/space of the uncontainable, and of Christ as "chora ton zontanon" - container/space of the living.

Compass - A compass, also known as a pair of compasses, is a technical drawing instrument that can be used for inscribing circles or arcs. As dividers, they can also be used as tools to measure distances, in particular on maps. Circles can be made by fastening one end the compass to the paper or other surface, and scribing a circle with the other end using a pencil, or other implement. The radius of the circle is derived from the span, or lenth, or the compass. A compass used for building circular forms such as domes or vaults operates in the same way as that used for drawing arcs on a surface, but is constructed with diverse designs. A simple masonry compass is a central stake attached into the earth, or flooring, and a rope of chain the length of the desired radius. Compasses can be contructed to make 2-dimensional arcs and 3 dimensional spheres, as well as variations in curvature that are more elliptical or flatter.

Cosmetes - also spelled Kosmites, (singular kosmitis) are the cornices which divide the levels of the church. Patriarch Germanos connects the cornices and the cross thus, 'The cornice (kosmites) denotes the holy order (kosmion) of the world (kosmikon), and shows the seal of the crucified Christ and God, adorned (kosmoumenon) with the cross.' (Patriach Germanos, Historia Mystagogia, Point No. 7., Trans. Mango, 1972 , p. 143)

Diaconia - The action of 'extending from one place to another, pervading', the action of 'ministry, service'. The most common use of diakonia (διακονία) refers to serving, helping or ministering. In a very Christian sense the ancient meaning of serving or helping others becomes that of being a spiritual guide to others. According to Strong's dictionary of New Testament terms (Strongs NT 1249), the word διάκονος, διακονου, ὁ, ἡ, is of uncertain origin. It is not a compound word beginning with the preposition διά (whose α is short), because in διάκονος the α is long. Therefore its root is likely διήκω - pervade, extend or reach from one place to another; or διώκω - to make to run, set in quick motion, to pursue a person, to attach oneself to, or be a follower of a person.

Eidolon - εἴδωλον , τό, (εἶδος) any unsubstantial form; image reflected in a mirror or in water; image in the mind, idea; image, idol, double, apparition, phantom; In Theosophy, the astral double after death, before its disintegration, is identified with the eidolon.

Ekklisia - Ecclesia, Greek Ekklisia, ("gathering of those summoned"), in ancient Greece, an assembly of citizens in a city-state. Its roots lay in the Homeric agora, the meeting of the people. The Athenian Ecclesia, for which exists the most detailed record, was already functioning in Draco's day (c. 621 BC), and by Solon's codification of the law (c. 594 BC), the Ecclesia had final control over policy, including the right to hear appeals in the hēliaia (public court), take part in the election of archons (chief magistrates), and confer special privileges on individuals. Assemblies of this sort existed in most Greek city-states, continuing to function throughout the Hellenistic and Roman periods, though under the Roman Empire their powers gradually atrophied. The word was transferred to the community of Christians who gathered to celebrate the Eucharist, and who were constituted as one body in Christ. The name was applied to the commmunity as well as to the building in which they gathered together.

Ekphrasis - The Greek term ekphrasis (ἔκφρασις) is attested from around the first century AD onward. Etymologically, the word refers to an act of "speaking out" (ek-phrazein), above all within the context of ancient rhetoric (Graf, 1995: 143): "ekphrasis is a descriptive speech that brings the subject shown before the eyes with visual vividness," according to a recurrent definition in Imperial Greek rhetorical handbooks. Ekphrasis, often synonymous with Eulogy, is one of the most thoroughly Christianized forms of oratory. Byzantine ekphrasis was often used to describe nature and works of art. The many descriptions of the heavenly majesty in the religious poetry of Byzantium serve as an example of ekphrasis.

Eulogy - A eulogy (from εὐλογία, eulogia, Classical Greek, eu for "well" or "true", logia for "words" or "text", together for "praise") is a speech or writing in praise of a person(s) or thing(s).

Eucharist - The eucharist, also called Holy Communion or the Lord's Supper, in Christianity, is the fundamental ritual commemoration of Jesus' Last Supper with his disciples, at which (according to tradition) he gave them bread with the words, "This is my body," and wine with the words, "This is my blood." Its name is derived from the Greek noun eucharistia (εὐχαριστία), meaning "thanksgiving". The related verb is found in New Testament accounts of the Last Supper, including the earliest such account: "For I received from the Lord what I also delivered to you, that the Lord Jesus on the night when he was betrayed took bread, and when he had given thanks (εὐχαριστήσας), he broke it, and said, "This is my body which is for you. Do this in remembrance of me". (1 Corinthians 11:23–24) The story of the institution of the Eucharist by Jesus on the night before his Crucifixion is reported in four books of the New Testament (Matthew 26:26–28; Mark 14:22–24; Luke 22:17–20; and I Corinthians 11:23–25). The letters of the Apostle Paul and the Acts of the Apostles in the New Testament demonstrate that early Christians believed that this institution included a

mandate to continue the celebration as an anticipation in this life of the joys of the banquet that was to come in the Kingdom of God. The Eucharist has formed a central rite of Christian worship. All Christians would agree that it is a memorial action in which, by eating bread and drinking wine, the church recalls what Jesus Christ was, said, and did. They would also agree that participation in the Eucharist enhances and deepens the communion of believers not only with Christ but also with one another.

Facade - The outside of the church, where the main doors are located. In traditional medieval design, this faced the west and is the exterior of the narthex.

Hierarchy - From the Greek word hierarchia, combining ἱερός (hierós) m. (feminine ἱερᾱ́, neuter ἱερόν) connected with the gods, supernatural, holy, sacred, consecrated, under divine protection; with ἀρχή (arkhḗ) f. (genitive ἀρχῆς) beginning, origin, sovereignty, dominion, authority.

Hyle - The 'hyle' described in Plato's Timaeus was seen both as 'matter' and and an intangible 'medium'.

Iconostasis - from the Greek εἰκονοστάσι(-ον) (eikonostási(-on), still in common use in Greece and Cyprus), which means "icon stand". It is most often a wooden construction screening the mysterium onto which are fixed icons in traditional arrangements. It developed from the more solid stone "templon screen" found in early churches, with reference to the veil of the Hebrew temple. It's height is taller than a person's direct view yet does not reach the roof of even a small church. There are three doors in it except in very small churches where there is only one. Doors are symbolically opened and closed during the liturgy, and for passage of the priest and officiants between the mysterium and the naos (nave). The most basic arrangement of icons puts Christ and the Holy Mother to the right and left to the central door, along with St. John the Baptist and the patron saint of the church.

Kataphatic - Kataphatic, or Cataphatic, comes from the Greek word κατάφασις kataphasis meaning "affirmation," coming from the prefix κατά kata ('according to', 'downwards') and verb φάναι phanai (to speak). Kataphatic theology uses 'positive' terminology to describe or refer to the divine – specifically, God – i.e. terminology that describes or refers to what the divine is believed to be, in contrast to the 'negative' terminology used in apophatic theology to indicate what the divine is not. In the Eastern Orthodox Church kataphatic theology is critical in the developmental stages of contemplation, or theoria. Once a firm grasp of the positive attributes of God or the divine has been achieved one moves onto the transcendent qualities of the superior or at least the corrective apophatic theology.

Lift - In construction terminology, a 'lift' is a vertically measured amount of building material. Commonly a set height of grout or concrete placed at one time, during a single 'pour'. It can apply to a vertical section wall constructed from a single material in one phase of building works.

Liturgy - Late Latin liturgia, from Greek leitourgia public service, from Greek (Attic) leïton public building; from Greek laos - people + -ourgia -work (Merriam-Webster Dictionary). Liturgy noun pl. -·gies - prescribed forms or ritual for public worship in any of various religions or churches, the Eucharistic service, esp. (Divine Liturgy) in the Eastern Orthodox Church. Origin of Greek leitourgia; public service to the gods (in Septuagint and New Testament, ministry of priests). Noun, plural liturgies; a form of public worship; ritual; a collection of formularies for public worship; a particular arrangement of services; a particular form or type of the Eucharistic service; the service of the Eucharist, especially this service (Divine Liturgy) in the Eastern Church.

Metaphysics - from two Greek words that, together, literally mean 'after or behind or among the natural'. It has been suggested that the term might have been coined by a 1st century editor who assembled various small selections of Aristotle's works into the treatise we now know by the name Metaphysics (μετὰ τὰ φυσικά, lit. 'after the Physics'). Metaphysics has come to mean the science of principles; the studies of what cannot be reached through objective studies of material reality; the study of the nature of the human mind; the definition and meaning of existence; or the nature of space, time, and/or causality, to name a few.

Metousiosis - Greek term (μετουσίωσις) that means a change of *ousia* (οὐσία, 'essence, inner reality'). In the Christian context commonly translated as transubstantiation, however the meanings are not the same. The Orthodox use of the Greek word μεταβολή (*metabole*), meaning 'change' is preferred to avoid engaging with the difference in understanding in Roman Catholicism and Protestantism. Orthodox theologian John Meyendorff writes in Byzantine Theology, '... in the Eucharist, man participates in the glorified humanity of Christ, which is not the 'essence of God,' but a humanity still consubstantial to man and available to him as food and drink....for later Byzantine theologians, the Eucharist is Christ's transfigured, life-giving, but still human, body, en-hypostasized in the Logos and penetrated with divine 'energies.' Characteristically, one never finds the category of 'essence' (*ousia*) used by Byzantine theologians in a Eucharistic context. They would consider a term like 'transubstantiation' (*metousiosis*) improper to designate the Eucharistic mystery, and generally use the concept of *metabole*, found in the canon of John Chrysostom, or such dynamic terms as 'trans-elementation' (*metastoicheiosis*) or 're-ordination' (*metarrhythmisis*).

Mystagogia - Mystagogy is the process whereby a mystagogue (from Greek: μυσταγωγός) initiates or leads another into certain sacraments. A mystgogue is a an educator or person who has knowledge of the sacred steps of a belief system. In ancient mystery religions, a mystagogue would be responsible for leading an initiate into its teachings and rituals. Its Greek root is μυέω (lit. 'to close the mouth') ἄγειν (to guide or to lead). In the early Christian church, 'mystagogue' was used to describe role of the bishop. It is not clear the exact meaning of the "closed mouth" but it possibly related to the 'kechari mudra' that is found in Yoga, in which the tongue, turned backwards and pressing gently towards the soft palate, influences the vagus nerve, and is part of the yoga of pranayama. Another possibility relates to the 'locked tongue' described in mystic poetry, from various religions, of those who enter mystic states. While

admitting of these possibilities which the author has been unable to personally test, the sense in which it is applied in this thesis is 'beyond words', that part of human cognition and activity that does not require speech and that is beyond the part of the mind that is relies on words.

Mysterium - Also called Sanctuary in Latin languages. An elevated platform that contains the main altar or bema, and associated liturgical elements that is restricted for ceremonial use by the priests. In orthodox churches today it is screened from adjoining spaces by the *iconostasion*, or *templon*. It is located to the east, centered on the main axis of the church, generally within the choir or the apse.

***Naos* -** The innermost part of a temple, the sanctuary, the part of the temple considered most pure and holy. In Christian architecture, the naos and the nave are equivalent. In the domed, centrally planned church the naos is the square area under the dome, or the whole area in which the baptized congregatation participates in the liturgy, or simply the entire church building. Etymology of naos, Proto-Hellenic nahwós, perhaps from Proto-Indo-European nes- ("to join with, to conceal oneself"). See νέομαι (néomai, "to go or come back"). Descendants: Greek: ναός (naós); English: naos; Palmyrene Aramaic: (nwsʾ); Classical Syriac: (nawsā); Arabic: (nāwūs); Literary Jewish Aramaic: (nawsā)

Nous - νόος - the mind, as employed in perceiving and thinking, sense, wit; the mind, more widely, as employed in feeling, deciding, etc., heart; reason, intellect; act of mind, thought; sense, meaning of a word, etc.

Narthex - The narthex is an architectural element typical of early Christian and Byzantine basilicas and churches consisting of the entrance or lobby area, located at the west end of the nave, opposite the church's main altar. Traditionally the narthex was a part of the church building, but was not considered part of the church proper. The word comes from narthex (from Classical Greek νάρθηξ "giant fennel, scourge") and was the place for penitents. From the narthex, those not eligible for admittance into the general congregation (particularly catechumens and penitents) could hear and partake of the service. In Modern Greek narthekas (νάρθηκας) no longer has this meaning and simply means the westerly entrance porch of a church.

The narthex would often include a baptismal font so that infants or adults could be baptized there before entering the nave, and to remind other believers of their baptisms as they gathered to worship. The narthex is thus traditionally a place of penitence, and in Eastern Christianity some penitential services, such as the Little Hours during Holy Week, or funeral services, are celebrated there, rather than in the main body of the church. In the Eastern Orthodox Church, the esonarthex and exonarthex had, and still have, distinct liturgical functions. For instance, the procession at the Paschal Vigil will end up at the exonarthex for the reading of the Resurrection Gospel, while certain penitential services are traditionally chanted in the esonarthex.

In some Eastern Orthodox churches, the narthex will be referred to as the trapeza (refectory), because in ancient times, tables would be set up there after the Divine Liturgy for the faithful to eat a common meal, similar to the agape

feast of the early church. To this day, this is where the faithful will bring their baskets at Pascha (Easter) for the priest to bless the Paschal foods which they will then take back to their homes for the festive break-fast. Traditionally, the narthex is where candles and prosphora will be sold for offering during Divine Services.

The doorway leading from the narthex to the nave is sometimes referred to as the 'Royal Doors', because in major cathedrals (Katholica) there were several sets of doors leading into the nave, the central one being reserved only for the use of the Byzantine emperor.

Oikoumene - The word comes from a family of Classical Greek words: oikos, meaning a "house," "family," "people," or "nation"; oikoumenē, "the whole inhabited world"; and oikoumenikos, "open to or participating in the whole world." Like many biblical words, these were invested with Christian meaning. The word oikoumenē describes the place of God's reconciling mission (Matthew 24:14), the unity of the Roman Empire (Luke 2:1) and of the kingdoms of the earth (Luke 4:5), and the world destined to be redeemed by Christ (Hebrews 2:5). The vision of one church serving God in the world came to reflect a central teaching of the early Christian faith.

Omphalos - ὀμφαλός from ancient Greek: navel (in anatomy), umbilical cord, anything shaped like a navel, hence: knob or boss in the middle of the shield etc.; centre or middle point, centre of a plant (botany) containing the seed vessel, centre of an army. Omphalos stones were believed to allow direct communication with the gods. The omphalos at the Temple of Apollo at Delphi that was supposed to mark the center of the earth. Similarly, the Christian omphalos stone at the Holy sepulchre in Jerusalem. In later times the omphalos stone marked the seat of power; the Emperor was crowned on Hagia Sophia, Constantinople's omphalos; the omphalos could generally mark the centre of a cathedral community.

Pantocrator - In Christian iconography, Christ Pantocrator (Greek: Χριστὸς Παντοκράτωρ)[1] is a specific depiction of Christ. Pantocrator or Pantokrator, usually translated as "Almighty" or "all-powerful", is derived from one of many names of God in Judaism. The most common translation of Pantocrator is "Almighty" or "All-powerful". In this understanding, Pantokrator is a compound word formed from the Greek words πᾶς, pas (GEN παντός pantos), i.e. "all"[4] and κράτος, kratos, i.e. "strength", "might", "power".[5] This is often understood in terms of potential power; i.e., ability to do anything, omnipotence. Another, more literal translation is "Ruler of All" or, less literally, "Sustainer of the World". In this understanding, Pantokrator is a compound word formed from the Greek for "all" and the verb meaning "To accomplish something" or "to sustain something" (κρατεῖν, kratein). This translation speaks more to God's actual power; i.e., God does everything (as opposed to God can do everything).

Panaghia - (Greek: Παναγία, fem. of panágios, pan- + hágios, the All-Holy, or the Most Holy; (also transliterated Panaghia or Panajia), in Medieval and Modern Greek, is one of the titles of Mary, mother of Jesus, used especially in

Eastern Catholicism and Orthodox Christianity. Panagia is also the term for a particular type of icon of the Theotokos, wherein she is facing the viewer directly, usually depicted full length with her hands in the orans position, and with a medallion showing the image of Christ as a child in front of her chest. This medallion symbolically represents Jesus within the womb of the Virgin Mary at the moment of the Incarnation. This type of icon is also called the Platytéra (Greek: Πλατυτέρα, literally wider or more spacious): poetically, by containing the Creator of the Universe in her womb, Mary has become Platytera ton ouranon (Πλατυτέρα τῶν Ουρανῶν), "more spacious than the Heavens". This type is also sometimes called the Virgin of the Sign or Our Lady of the Sign,

Paradigm - Paradigm comes from Greek παράδειγμα (paradeigma), "pattern, example, sample" from the verb παραδείκνυμι (paradeiknumi), "exhibit, represent, expose" and that from παρά (para), "beside, beyond" and δείκνυμι (deiknumi), "to show, to point out". The original Greek term παράδειγμα (paradeigma) was used in Greek texts such as Plato's Timaeus (28 AD) as the model or the pattern that the demiurge used to create the cosmos. In linguistics and philosophy, the Merriam-Webster Online dictionary defines Paradigm as "a philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated; broadly: a philosophical or theoretical framework of any kind."

Pendentive - From the Latin pendere, meaning 'to hang down'. In architecture, a pendentive is a constructional device permitting the placing of a circular dome over a square room consisting of four arches. The pendentive segments look like a triangle with its base at the top supporting the dome, and the pointed tip hanging downwards between four arches which define the square. Pendentives enable open spaces under masonry domes, spanned by large arches. In masonry the pendentives thus receive the weight of the dome, concentrating it at the four corners where it can be received by the piers beneath. The first Roman experimentation with pendentives began with the dome constructions of the 2nd–3rd century AD, while the height of its development came in the 6th-century Eastern Roman Hagia Sophia at Constantinople.

Pneuma - In classical antiquity *Pneuma*, 'air in motion, breath, wind', is equivalent in the material monism of Anaximenes to aer (ἀήρ, "air") as the element from which all else originated. This usage is the earliest extant occurrence of the term in philosophy. A quotation from Anaximenes observes that 'just as our soul (psyche), being air (aer), holds us together, so do breath (pneuma) and air (aer) encompass the whole world.' In this early usage, aer and pneuma are synonymous. In ancient Greek medicine, pneuma is the form of circulating air necessary for the systemic functioning of vital organs. It is the material that sustains consciousness in a body. According to Diocles and Praxagoras, the psychic pneuma mediates between the heart, regarded as the seat of Mind in some physiological theories of ancient medicine, and the brain. In Judaic and Christian usage, pneuma is a common word for "spirit" in the Septuagint and the Greek New Testament. At John 3:5, for example, pneuma is the Greek word translated into English as 'spirit': 'Verily, verily, I say unto thee, Except a man be born of water and of the Spirit (pneuma), he cannot enter into the kingdom of

God.' In some translations such as the King James version, however, pneuma is then translated as 'wind' in verse eight, followed by the rendering 'Spirit': "The wind (pneuma) bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh, and whither it goeth: so is every one that is born of the Spirit (pneuma)." Philo, a 1st-century Hellenistic Jewish philosopher commented on the use of Πνοή, rather than πνευμα, in the Septuagint translation of Genesis 2:7. Philo explains that, in his view, pneuma is for the light breathing of human men while the stronger pnoē was used for the divine Spirit.

Poetics - In philosophy, poiesis (from Ancient Greek: ποίησις) is 'the activity in which a person brings something into being that did not exist before.' Poiesis is etymologically derived from the ancient Greek term ποιεῖν, which means 'to make'. In the Symposium, a Socratic dialogue written by Plato, Diotima describes how mortals strive for immortality in relation to poiesis. In all begetting and bringing forth upon the beautiful there is a kind of making/creating or poiesis. In this genesis there is a movement beyond the temporal cycle of birth and decay. 'Such a movement can occur in three kinds of poiesis: (1) Natural poiesis through sexual procreation, (2) poiesis in the city through the attainment of heroic fame, and, finally, (3) poiesis in the soul through the cultivation of virtue and knowledge.' (Quote, ref?)

Prototype - a first or preliminary version or model from which other copies are based or formed. Prototype is distinguished from Archetype by the prefix prot-, or proto-, which comes from Greek and has the basic meaning 'first in time' or 'first formed' (see Archetype, where arche means origin or beginning). A prototype is first example of a type (typos). It has the sense of being the first manifest iteration. A prototype can be specific and time-bound.

Sanctuary - see Mysterium

Spoleia - Spolia (Latin, 'spoils'), repurposed parts of old buildings for new construction. Spoleia is the result of an ancient and widespread practice whereby stone that has been quarried, cut, and used in a built structure, is carried away to be used elsewhere. Often these are highly worked, decorative and sculptural elements reused in new monuments. The placment of the spoleia reflects the attitude of the builders to the older artifacts they are building into the new. It is sometimes that of conquest, sometimes to assert a cultural change, and somtimes to respectfully continue a precious piece of the past within the new order. The practice is of particular interest to historians, archaeologists and architectural historians since the gravestones, monuments and architectural fragments of antiquity are frequently found embedded in structures built centuries or millennia later.

Squinch - In architecture, a squinch is a construction filling in (or rounding off) the upper angles of a square room so as to form a base to receive a multi-faceted (usually octagonal) or spherical dome. Prior to the pendentive's development, builders used the technique of squinches to support a circular dome over a square room. The dome chamber in the palace of Ardashir, the Sassanid king, in Firuzabad, Iran is the earliest surviving example of the use of the squinch, suggesting that the squinch may have been invented in Persia. How-

ever, it seems likely that it was developed in early Mesopotamian mud-brick construction, and brought to a high art by the Persians. Squinches bridge over the corners of a room and they need to sit on solid walls. The resulting spaces are more closed than those achievable with pendentives.

Symbol - Derives from the Greek symbolon (σύμβολον), meaning "token, watchword" from σύν syn- "together" and βάλλω -bállō " "I throw, put." This throwing together refers to an ancient custom of breaking a coin or ring in two when friends would part for a long time. If one of them, or one of their other friends or relatives, returned after many years, the two parts of the coin or ring could be compared with each other. This would give the possessor a token of identity and a right to the other person's hospitality. The sense evolution in Greek is from "throwing things together" to "contrasting" to "comparing" to "token used in comparisons to determine if something is genuine." Hence, "outward sign" of something. The meaning "something which stands for something else" was first recorded in 1590, in Edmund Spenser's Faerie Queene. Symbols allow people to go beyond what is known or seen by creating linkages between otherwise very different concepts and experiences. All communication (and data processing) is achieved through the use of symbols. Symbols take the form of words, sounds, gestures, ideas, or visual images.

Synaxis - σύναξις is an assembly met for worship, especially an assembly in the early Church gathered for a liturgical service. The word came to refer to the divine liturgy of the Eastern Orthodox Church. A synaxis in Eastern Christianity, generally took place for the celebration of Vespers, Matins, Little Hours and the Divine Liturgy. In Constantinople, the clergy and faithful would often gather together on specific feast days at a church dedicated to the saint of that day for liturgical celebrations. These gatherings were also referred to as synaxes. Over time, the synaxes came into general use.

Templon - see *Iconostasis*

Theoria - Commonly translated as theory, the word theoria, can be broken down etymologically into thea- and -oria. The verb -(h)orao (ὁράω) has indo-european roots, meaning to see with the eyes, and relates to our word for horizon and all things that come into view either visually or mentally. Hence theoria includes a range of outer and inner vision. Thea- has a relationship with the word theatre, and also has meaning of viewing, but may have some relationship with the concept of Thea, Goddess in the ancient world. 'θεωρῶ - Ετυμολογία: θεώμαι < αρχ. θεῶμαι < θέα < *θηFη < *θάFα και ορώ < αρχ. ὁρῶ < IE swor- | wor- | wer-' (accessed from https://www.lexigram.gr/lex/arch/θεωρῶ on 1/2/2021) According to Louth, *'The word theoria is derived from a verb meaning to look, or to see: for the Greeks, knowing was a kind of seeing, a sort of intellectual seeing. Contemplation is, then, knowledge, knowledge of reality itself, as opposed to knowing how: the kind of know-how involved in getting things done. To this contrast between the active life and contemplation there corresponds a distinction in our understanding of what it is to be human between reason conceived as puzzling things out, solving problems, calculating and making decisions - referred to by the Greek words phronesis and dianoia, or in Latin by ratio - and reason conceived as receptive of truth, beholding, looking* - referred to by the Greek words theoria or sophia (wisdom) or nous

(in*tellect), or in Latin intellectus.'* (Andrew Louth, "Theology, Contemplation and the University" in Studia Theologica, I, 2/2003, 66-67" (PDF). Archived from the original (PDF) on 2016-03-03. Retrieved 2017-04-05.)

Theotokos - The title Theotokos (in Greek, Θεοτόκος) is a Greek word that means "God-bearer". In iconography it refers to the pose of the mother and child. As a title for the Mary, "Theotokos" was recognized by the Orthodox Church at Third Ecumenical Council held at Ephesus in 431. It had already been in use for some time in the devotional and liturgical life of the Church. The theological significance of the title is to emphasize that Mary's son, Jesus, is fully God, as well as fully human, and that Jesus' two natures (divine and human) were united in a single Person of the Trinity. Because Mary is the mother of God the Son, she is therefore duly entitled Theotokos. Calling Mary the Theotokos or the Mother of God (Μητηρ Θεου) was never meant to suggest that Mary was coeternal with God, or that she existed before Jesus Christ or God existed. The Church acknowledges the mystery in the words of this ancient hymn: "He whom the entire universe could not contain was contained within your womb, O Theotokos."

Topos - τόπος , ὁ - place, region. Used both physically and metaphorically; applied to a broad range of subject matter. To name a few from examples cited in Liddell and Scott: the whole earth, Greece, towards the West, a whole region, the places of a country, the universe divided into three τόποι, public sites or buildings, houses and sites, sites not built upon; place, position, leave a space (in a document), have a place, hold the place of . . , have room (to grow), in place of, instead of, on the spot, immediately "ἐπὶ τόπου", a wrong place, by virtue of the place and the time, place or part of the body, passage in an author, burial-place, freq. of the grave of a martyr, or of a monastery associated with it, a room in a house, position on the zodiac; a topic, common-place or element in Rhetoric, metaphorically an opening, occasion, opportunity, leave room for the wrath (of God), give occasion to . . .

Type, *Typos -* from týptō, 'strike repeatedly' τύπος, τυπου, ὁ (τύπτω) – properly, a model forged by repetition; (figuratively) the correct paradigm, based on reliable precedent for others to then follow, (i.e. the right example, a proper pattern). The mark of a stroke or blow; print, imprint, a figure formed by a blow or impression; hence, universally, a figure, image: of the images of the gods; the form of teaching, for example, or manner of writing, the pattern in conformity to which a thing must be made, in an ethical sense, a dissuasive example, pattern of warning, an example to be imitated, a person or thing prefiguring a future (Messianic) person or thing: in this sense Adam is called τύπος τοῦ μέλλοντος namely, Ἀδάμ, i. e. of Jesus Christ, each of the two having exercised a pre-eminent influence upon the human race. Events, persons, or statements in the Old Testament are seen as types pre-figuring or superseded by antitypes, events or aspects of Christ or his revelation described in the New Testament. In the Eastern Orthodox Church, typology is still a common and frequent exegetical tool, mainly due to continuity in doctrinal presentation. Typology was frequently used in early Christian art.

APPENDICES:

APPENDIX A: MASONS' INTERVIEWS

Part of my field work has consisted of interviewing masons, and the four selected here are three stone masons and one brick mason. The three stone masons were from the remaining traditional masons' guilds (*bouloukia*) of Northern Epirus, with whom I studied in a hands-on workshop during August 2018. Out of six interviews, 'Boulouki 2, 4, and 5' have been transcribed and translated from the original mixture of Greek and English languages. The fourth is a written response translated from Spanish, from a brick Catalan mason of Valencia, Spain, with whom I have taught two hands-on classes. He is one of a growing number of masons using ancient techniques which continue mainly in Catalonia and in Mexico. The Catalan techniques are in essence the same 'leaning arches' techniques used by Egyptian masons today, whose art was preserved and revived in the 20th century, partly by architect Hassan Fathy, with possible inputs from Rene Guenon. Each tradition around the world has evolved their own variations. The Catalan masons' lightweight techniques of building vaults and domes without supports are extremely versatile and spread into north America in the 20th century. Others not included due to lack of space are three Boulouki masons, and much lengthier interviews with an American Catalan mason who trained in Mexico, as well as a few first-time student builders of earthen domes and vaults in France and Cyprus. I have chosen these four as the most concise yet representative. All my questions followed the same format.

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Boulouki 2 - Christos Kyriakogonas

- Kyriakogonas: Christos Kyriakogonas is my name and I give my permission for this (interview) to be used from now on.

- Iliona: All right. The first question: I am interested in your feelings about building with earth, stones and gravity, the weight of the material and the relationship between you and the material and what you are creating. So the first question is, do you ... how has building with stones, bricks, earth, you know, the heavy materials changed you from when you first started until today - if it has changed you.

- Kyriakogonas: It has changed me to the extent that I have understood, I have come into contact with these materials, and I have understood how they work, how they become one with the earth, because that is what attracted me at first. That it is a system that they can return to the earth and ... after many

years, let's say, become one with the landscape. Like the house we saw today, yesterday, let's say, that the ivy had clinging to it, let's say, and it was joined in ... [Iliona: The ruin! Yes ...] yes, it's a wonderful thing [Iliona: Beautiful! Yes ...] You can not see it in modern buildings [Iliona: I went out and see it] It's terrible. So, this naturalness and this integration into the landscape fascinates me. That is, all that I have seen all these years has just made this stronger for me. The other thing is that because the project we were dealing with was cooperative, it means that people's relationships, that is, the groups that we made, were very, how shall I say it, very useful, very instructive. Because you make a small society to go ahead with a project. It makes you grow as a person very much, that is, because every [Iliona: It makes you grow as a person] As a person, yes. You are three months there to build a house, and pass the time, you feel like it's a lifetime, you go through a whole history. Its very beautiful. [Iliona: Indeed] And of course, our relations, our relations between us in the group, this too is another learning process.

- Iliona: Does it change from start to finish?

- Kyriakogonas: Yes! it solves problems, you learn how to live together, how to confront issues by consensus [Iliona: It changes from need or from ...] No, from ... [Iliona: because you want?] because we want it and because we see that it works so much better than only one person directing, or making decisions unilaterally, let's say. And it has ... it is a more difficult process, of course, but it is more substantial.

- Iliona: And this happens not only with the team doing the same work, but with another trade ... that is, among the ... plumber, the electrician, the guy doing the windows ... this community of .. .is formed …

- Kyriakogonas: Sometimes yes, sometimes no. For example, there are coworkers who have worked together only once. They are not in our team. There is a basic team of seven people. There are other people who have worked with us more times, like the roofer, for example, but there are people who only come for a couple of days, for the plumbing, for example.

- Iliona: So it takes time, but it does not matter if your job is the roof and the other man's job is the walls.

- Kyriakogonas: No, no, it does not make any difference.

- Iliona: So, another question is about the direction of the builder's mind. When you make a house, whatever material let's say, but a single structure, is there a point of reference in your mind, and if so, what is it? For example, if

we build a dome, we often have this center point and people say, because the weight of the materials is always in reference to that center point, you begin to feel this center point almost like a living thing. It's a focus point. Even some of the students I've interviewed say they feel this, even if they're working mixing the material itself. So, since you are someone who's built a domed oven, but generally you are building other houses, I want to understand when you are building such a house, do you have ... there are actually two questions, I'll explain and then maybe you can answer one by one ... about the direction of somebody. You know, is your direction money, doing a good job, making your wife happy, pleasing God, whatever ... And the point of reference that exists during the actual structure. So the first question is: Is there a point of reference in your mind, the builder's mind, and if so, what is it? Is it the center point of the building, is it the Master mason you always have to be aware of, or the jobsite boss, this may be you, always aware what he wants, where is he, what is he doing, I am doing it right, with reference to that. It is God, Christ, you know, the client, the stones themselves, the material, your wife, your house and so on. And [second] if you feel there is a reference point, has it changed for you over the years? If it's a question that you can not answer, do not worry, we're going to the next one. [Kyriakogonas: It's something I had never thought about it] We'll go to the next one.

- Kyriakogonas: No, I can answer! I want to try because it is very interesting. For example, in the center as you say, for the domes, which I have touched upon only from (building) ovens, obviously did not feel the same as they describe, that those who build around the center feel it as a point of reference, because it is obviously very powerful, because it (the oven) is small. Definitely, there is a circular action ... it is clear. And there is one such ... the intense, how can I say ... There is a beautiful feeling when you use the center and thread (compass) to build. That is, this circular is powerful, it's beautiful. But in a small scale now. Now in everything we make, for a point of reference you can say that for me, it is should turn out to be as beautiful as possible. That is, it should be in harmony with the place where it is located, in harmony with the people, that it should be in agreement with the people for whom it will be made, fit with what they want, that is, because we decide on it together ... [Iliona: The notion of harmony] The notion of harmony is this. That's it, yes, that is

- Iliona: This is the fixed point, the point of balance, it is the notion of harmony.

- Kyriakogonas: Now in building up there, I do not know how it could be compared, so to say, to the dome center.

- Iliona: All right. And for the other thing? For the direction? Do you also feel that? [Kyriakogonas: For the responsibility?]. Yes, the direction. Well, what you direct yourself towards. If you have a goal, while you are building [Kyriakogonas: I believe that ...] Is there some people ... [Kyriakogonas: The harmony that we talked about] I'm sorry? [Kyriakogonas: The harmony that we talked about. I think this is it ...] Little bit different ... goal is more like something in the future you're rushing to catch it, to get it. But, this harmony, is what I asked you, the center point, is something that you feel right now, or you do not feel it. [Kyriakogonas: I don't understand] This sense of harmony that you are talking about, you are not running after it. Either you feel it or you do not feel it. You feel it? As long as you feel it, you know you're doing right. If you do not feel it is going wrong. This builder is not happy. This one is going to do something wrong. This one is going to leave. Everything will fall apart. Okay. So this is ... [Kyriakogonas: this is true in the minutes] the center point. Now, direction is more, "oh ... this job is going to earn me a lot of money" or "I'm building this for someone who is poor and I want them to be happy" and this is like a future thing. Something, a motivation, let's say. Maybe there is no other motivation, except the good feeling of being there and doing it.

Kyriakogonas: I think that is it. Because every time the direction is different. I can not say that it is fixed. But the sense of beauty, harmony, and that you are making something that is also worthwhile for us, let's say, and for those who use it, that is permanent/unchanging. Plus these changes ... the forms (of the building) change every time, but it's the same thing. And, of course, they also give you something to be able to live.

Iliona: So the direction is a bit different on every project, but that feeling is the same, that focus is the same.

Kyriakogonas: Yes, this is... the filling, for example ...

Iliona: Good, interesting. Okay. The last one you answered, on each build or job site you notice a difference in the relationship between builders from the beginning to the end and how. I think you already talked about it, but if you want to speak more ...

Kyriakogonas: Yes, of course. Every different collaboration of people is something completely different, and it also requires totally different handling at a time. That is, you are adapting to the collaboration and you find the best way to do things.

Iliona: And in the meantime there is motivation of everyone.

Kyriakogonas: You should feel this too. Understand it, that is.

Iliona: Has there been any job site where people did not get closer? Where everybody actually breaks apart, or you can not have a successful building, if that does not happen?

Kyriakogonas: No, this has not happened, but building can not continue, indeed. There were times when they were in the limit. To the limits. But something was always happening. That is, there was a man who was giving his energy not to overcome this tipping point, and something that always brought you ...

Iliona: Has there been any moment, either in your entire career as a builder or during a period συνθήκη of one building, when the stones that seemed heavy at the beginning suddenly seemed to become light, lighter, easier ...

Kyriakogonas: Yes! Though it does not depend on the kind of project but on what we said before. From people's relationships. When we feel that there is tension in our relationships and something goes wrong, that's when the stones get heavier, and you have no desire to lift them at all.

Iliona: Very interesting stuff you say. Very important. And then, this is an obvious question, do you have a feeling about where is the right place to put bricks, stone and so on ... By understanding gravity, what that material wants, and it's something that has to develop over time?

Kyriakogonas: No, the truth is that I usually have a very strong feeling about where everything will go. Not necessarily the right one. Because there can be, let's say, another opinion, that I will hear in that moment and it changes that feeling. Then I would feel that this really should not go there. It should go there. Just as strongly, though. That is, this feeling exists. But again it has to do with the harmony we said before. That is, you feel it, you feel what will result will be harmonious. And you are looking for maximum harmony. So, listen to everything and try to have your antennas open to connect, to understand exactly how it should be done. The second part what was it?

Iliona: Is harmony something every man already has, or does it need work to come out, or does it come out with experience?

Kyriakogonas: Yes, I think every man has it, but he certainly wants a job. And work for me only happens when it's something I like. Otherwise you can not work it, nor can harmony come out. It can not be done. You can't go and do it forcibly, as a job, that now that I will work to look for harmony ...

Iliona: And from the beginning, do you notice any difference in your relationship with the land, with the landscape, when you are building and when you are not building. Let's say, at the time you are building, you have a relationship with the land on which you are building. And then in your everyday life you have a relationship with the land. You have a car, you go home, you cook and so on. So, do you notice a difference in your feeling about it.

Kyriakogonas: Clearly. Of course. And every time one makes something, that feeling becomes even stronger for me. I feel closer, that is. We built in the Gargalians and beyond from the feel of stone and the clay at that time, there is the moment when you sit and take a break, and it is next to an oak tree, to a carob tree. There, perhaps from fatigue, perhaps from the landscape, maybe ... I do not know what happens, but there are moments that are very intense, extremely beautiful, that you feel a real connection. Now, you cannot feel this in the city, it does not happen. So in every ....

Iliona: They don't show up ... I do not know how to say the right word. You cannot carry them (those moments) into your daily life or can you ... the more you practice, as you are building, it also happens in your life.

Kyriakogonas: Yes, that's how it is. Because there are moments which arrive, let's say, in Athens when I'm sitting and this feeling returns, since it exists. Not for long, of course, but it does come back. It sustains you, this sustains you.

Iliona: Good! Thank you very much.

Kyriakogonas: You're welcome!

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Boulouki 4 - Giorgios Triantafyllos

[- INTRODUCTION -]

- Iliona: My first question is ... I'm interested in the mason's feelings when he builds with stones, with gravity and with a team. So, I have here five questions related to your feelings about this work. The first is whether building with stone has changed, whether it has changed you since the first day you started to build with stones until today. If it has changed anything in your life, your mindset about the landscape, people, or anything else.

- Triantafyllos: In relation to people and the landscape; yes, certainly the way you perceive yourself with the land. Before you start doing this work, nature, stone, is completely different from the day that you start doing this work. Things you saw before, which went unnoticed, passing through a

place, seeing stones everywhere in nature that did not move you at all, afterwards with this work you do change (become), you feel (see) as if you are closer to the earth, with earthliness, with the stone. And especially for me, because I loved this very much, all the years I worked with stone, I began to observe everywhere I went, to really see, to observe the old houses made of stone. Even more so when I look at the mountain, the volume. One stone in the mountain, which earlier would not have made an impression on me at all, which to another passer by does not make an impression, I was looking deep into it like my work. I was looking at the stone and saying to myself, this big rock on the road that we are passing, you can open it up like this, it will become a fine stone, a beautiful house ... I was gazing at the colors, the variety that exists in the stones, in the big rocks, because they have many colors. Generally, I began to observe the stone in nature herself. As for my life , it has changed me, okay it's like this, you learn to work with this material and you have to become one with it, you have to listen to it. You have to be a friend with this material and you have to listen to it ... when it goes "tak-tak" under the hammer, you have to hear how it is working inside. You do not just do it mechanically, like another job in the building trade. You have to be one with the material.

- Iliona: Yes, because there is something inside that you have to listen to. It is not obvious (superficial).

- Triantafyllos: Yes, it's not obvious. For the mason who in time learns to work it (the stone) visually, even what is clear on the surface has something inside, and even the sound when you hit it, will make a crack-crack sound when the stone opens. You have to learn to listen to the material. And you have to learn to respect this material, not as something immaterial.

- Triantafyllos: ... a simple material, but a material that has substance (lit. being). Like the tree, let's say, the leaf that grows slowly slowly and is a living organism, that is how the stone is. It's an living organism.

- Iliona: And this feeling, does it grow? - like a child grows up? Is it there from the first day, or does it take time for the craftsman to learn, listen and learn.

- Triantafyllos: It grows continuously, every day. It's never the same. It's not like working with bricks for example, which are always the same. With stone, however many years pass, every stone that you hit is different. It is, as you said, as if you are raising a child. Every day you learn from this material. You work with different materials. It is one material here in Tzoumerka, another one somewhere else in Athens, another in Crete. All these materials are

different. No one is the same. They may be stones but none are the same. But most importantly, these craftsmen who have done good things must love it (the stone). You must be beyond work. It must be like your girlfriend, the stone is your friend. You should think about it at night, [Iliona: Heart!] In the morning when you wake up. You must like it. You can not do this job only mechanically and do fine things, as you do in other jobs in the building trade. I do not know if I am helping you, the way I am saying things….

- Iliona: Yes, yes, it very good! And the other question is related to this. When ... there is a moment, is there perhaps a moment, either in your life, in your career, or on a building that you build with others, is there perhaps a moment when the stone changes from heaviness to lightness? ... does it get lighter?… I do not know how to say it well ... does it change from something very heavy to something that has ... that is like a light thing ... either on a specific building or for a person on the job ... Do you remember ?… Do you perhaps remember some moment when this changes? The weight changes, let's say. Gravity is not ... as you told me, you have some relationship with the stone and one day it is like this, but another day is different, perhaps gravity is not something that you measure from the outside, but gravity has ... it changes ... I do not know ... I do not know if you understand …

- Triantafyllos: Yes ... if the gravity changes? What do you mean?

- Iliona: If you had this experience, let's say.

- Triantafyllos: I do not know if I understand exactly what you say ...

- Iliona: What I'm saying ... when we build these domes from earth, earth and sacks, earthbags, sometime when you have done enough exercise and you get to one third built ... at some point something starts to happen…. whether it is us or whether it is that we have got in tune with the building, or we've got in tune to be steady in gravity with the material, or it could just be that moment on the dome ... but something begins ... it's like you are flying!

- Triantafyllos: Ah! I understand, I understand!

- Iliona: At some point it is as if you are flying and it (the work) finishes easily and everyone is happy! They do not want to stop!

- Triantafyllos: This has happened many times! Many times I have loved the work I did ... let's say on ten jobs that I did at a certain time, from a certain age ... until thirty years old, maybe not. But after that I bonded (fell in love) very much with the stone. And every building that I did, I saw what you

are saying, you rise up spiritually. That is, I was like ... I loved it so much, as if it were my child. This elevates you very high. I did not think it as work. When I take a stone and I work with gravity, with the gravitational force to build a building. I saw it as something higher. Real progress. I progressed with that. With every job I was progressing. How can I tell you ... I was passionate. I am passionate about every job with stones. My wife knows ... Let's say now what I did here at Boulouki I just did it only out of passion ...

- Iliona: Does this feeling also happen as a group?

- Triantafyllos: The team, let me tell you ... Many times I have been disappointed because some others in the group do not see it the same way. They see it as a job. Mechanically. They do the work to get the money. Not me … I was getting money, of course, but never, did I see it that way, just for the job, for the money. I have done jobs that were very cheap. We did not make a good agreement and it was, I don't know, let's say thirty instead of fifty. I never, ever, thought about doing a thirty-euro job. I did it ... I tried as if the job was for sixty ... I always did the best quality work that I could. I'm not perfect. That is, if I could have put out/made eight, I would do a job for eight. No matter if I had been paid three. I always thought about why I liked it very much and that matured me. While I was at work I have never thought of how much money I get. If it is little or much. Do you understand? For many years I have done this.

- Iliona: That's another question! This touches on the other question!

- Triantafyllos: Perhaps, okay ... now I do not know if I understood that about the weight and gravity. If you mean this. That it took me away to the work...

- Iliona: You say that until around thirty it had weight [Triantaphyllos: Yes, when you are young ...], but then, when you started to love the job, the material ….

- Triantafyllos: From a very young age I had been singled out, that is, I saw masons, with whom we learned together ... they did not care for the stone. They saw it as a job. I wanted it from young, I was restless. From twenty, eighteen years old, I went to work until twenty-three when I started to build. Others take until thirty to build. I wanted to learn everything. To do chipping/shaping of stones, then I wanted to make coping stones, then I wanted to make corners. Always on my own. I did not stop. I wanted to know something, I did not stop there. Then I wanted the other time to know how to make corners, the angles. I wanted to know how to build, I wanted to know how to make an arch.

I always desired continuously ... I liked it very much and wanted to learn all the time. And slowly with time comes what you call love, this is an inner feeling for the stone. While some others are working mechanically. (Like) Come on, let's go to "work", because they are doing "work" to ...

- Iliona: And don't they feel the work is heavier?

- Triantafyllos: Yes, and sometimes they tell you. [Iliona: It's not easy for them] Yeah, it's not easy. That's what I wanted to tell you. It's not easy when you work like this. I could not work that way. It keeps you down low.

- Iliona: But for you [Triantaphyllos: It keeps you low] that have the feeling of love, it is easy.

- Triantafyllos: Yes, exactly. I was saying, for example, to a co-worker, let's learn to do that ... "Oh!" he said, "leave it, it doesn't matter, because how much money will we get, it will be the same." Or he goes to work without eagerness. "Eh! what am I doing? I do this all day every day." I did not see it that way. I liked it very much.

- Iliona: And in relation to that, do you have a feeling of - how do you say intuition - maybe feeling is a good word - for the right place to put a stone, not by measurement or anything, but because you know what the stone wants and ...

- Triantafyllos: The builder himself knows what the stone wants. Yes, you see it yourself in your mind's eye, beyond gravity, where the stone should sit, you must have a feeling for it. Look ….. now, this stone will go here, it will be fine. It is possible to down put any old stone wherever it stops/rests. But yes, when you decide that it will be the best, you put it there. Is that what you mean?

- Iliona: No, I mean that it finds its place [Triantafyllos: In Place] and does not fall. As you showed us today. As I showed you today. So that it is in balance, and it sets there. It should not go out of [Triantaphyllos: the line] of gravity.

- Triantafyllos: Yes, you saw that. Yes, that is essential. You must take the stone to see it with a first look. You should turn it around….you should look at every stone from all around so that you can select which stone is good, so that the wall is strong, sturdy and accurately tied in there. With gravity.

- Iliona: Have you also built .... have you built vaults or ... [Triantaphyllos: arches?] Arches? [Triantaphyllos: Yes!] Kamares. Is it, I know ... is it

different?

- Triantafyllos: Yes, the arch is different. It is technical ... not everyone can do it. It's something beautiful. You make something that is supported by gravity by itself. And it wants to ... it is stabilized on its own by gravity. When it's done you feel very very good, that you've managed to get it to lock (keystone) in place by itself. This too needs special technique, not everyone does these. You have to learn...

- Iliona: Do they make it over a form or ...

- Triantafyllos: ... over a form. I mean, not all the craftsmen do it. You have to learn to do it. It need a special skill. You do it on formwork, on a wooden form. Then remove the wooden form and it stays up. You have put in the keystone ... The last moment when you put in the keystone that is really, really good [Iliona: and you need to know how to put enough weight so that it does not...] does not sit ... [Iliona: to stay firm].

- Iliona: When ... now ... when you build with the stones, when you build with anything, let's say, it's a little different for you than for the students who make these domes. When they do the dome, they have something in the centre to measure all around. I wonder, however, whether in other buildings, another kind of building like this one, let's say, that is not a circle, if there is a point, as a point of reference, a point where the mind of the builder returns to this point. And this point does not need to be a physical, built point, like the [Triantaphyllos: the dome ...] compass. It could be a person - how do you say the Master mason? - the Master ... the Master mason, the owner, God, the stone, a woman ... if there is something to which .. .with which the builder or the mason centres himself? or (maybe) it does not exist. The truth is that I want to ask two questions. The one question is about the direction. Some people have a direction that is probably the money, or they are wanting to make the most beautiful city house, or their direction is they want to do something good for the environment ... that's one, "the direction"; you are not there, but it pulls you, it gives you the energy to do this job. The other is if there is something where you get centered within the work. Another person, for example, told me, "It's the balance. I am concentrating on the balance when I build." He was the one who is ... he does not build with stones much, a little bit, but he organizes various people to build together; the team. It is he who is (on top) ... [Triantafyllos: the contractor] ... the contractor. And he tells me ... told me that, it's the balance. He must feel a balance at all times, and that way knows that everything is going well. That all the workmen are in their place, they don't have any problems ... I asking something like that. On the one hand, I ask myself when I see you as

a stone mason, with stones, as a mason such as yourself, whether you need or whether you have a direction or if you have something to focus on. And if you do not ... or if you do not ... or if it's just for the joy ... [Triantaphyllos: of the stone] ... of the work. The stone [Triantafyllos: the work].

- Triantafyllos: Okay, that's a lot ... Balance must exist in a working group/collaboration. There must be a balance. When there are many persons and you are not alone. They must be balanced ... The one who in chipping/shaping the stone must know what you want. You may not have the same intention. I love working with stone very much ... I have worked with people who did not have this love for the stone but they were very good craftsmen. They knew, they wanted, and they did the right thing. There must be a balance. The one who is chipping/shaping your stone for you to build with it ... why do they not chip/shape ... not everyone builds ... some are chipping/shaping, others are building. Personally at some point, because I had worked by myself - chipping/shaping stone by myself, I building by myself - I wanted to do it all perfectly. Now, about centering oneself/the focus ... I ... there is God. You make a prayer in the morning to God to be good, to help you do the stonework well, the house, but actually the time that I am working, eight hours, I'm very focussed on the work. It's like a ... that is, as if you go to a psychologist called "occupational therapy" ... [Iliona: in stone already] ... in stone. I do not think of anything, for very many hours. It cleanses my mind completely and I am completely focussed there on the stone.

- Iliona: Oh! you do not think anything.

- Triantafyllos: I'm thinking ... okay. You have a family, you have problems, you have kids, but with ... I'm a little farther away. You will certainly think, you can not not think, but it pulls me too ... It absorbs me very much. I have ... My mind is focussed there, in the stone. What I told you before. It is not, a ... something immaterial. I see it as something alive that I have to give him a form [Iliona: You have to listen to it]. I have to listen to it and give it a form ... [Iliona: to have a dialogue] ... to have a dialogue in order to chisel/refine it, for it to become as beautiful as possible. It cannot do this by itself. While it's lovely. You have to help to make the stone beautiful, to chisel it yourself, and I am very focused on this at the time I am working.

- Iliona: All right. And in this matter ... in the area of his money... regardless of whether the owner's wishes are related. That is, from the beginning you can organize with the owner ... "do you want it like this, or you want it like that?" But when you work you have no purpose for the owner or for anyone else. It is about your focus at work. Is that so?

- Triantafyllos: Definitely you have to present what the owner or the architect wants. You can not present anything else. But you often intervene. There are other craftsmen who say, "this is what the owner wants, this is what the architect wants, do it like that." I am a person of style, that is, I have spoken to many architects, and if they see it after two or three days, or as the work progresses, I can say to him that is not so good like this. Without insulting him, "Let's do it, I like this, look at this as well, let's do it like that ...". I also give my own opinion/direction. And very many architects, most of them especially with stonework, they respect it. And they listen to the craftsman. Many architects come straight to you themselves and say, "tell me, what should we do here, what should we do there? You know a lot.", I don't know. But I try to put out my own style, my own little stonework to the architect, to the owner. If he understands that you ... you are ... that you love this and that what you tell him is something good, he will ... listen to it.

- Iliona: Lastly, I think, the question is ... Every time that you - I understand now that you are working alone - but perhaps when you are with others in building a building, do you see a difference between people from start to finish? And whether it is always something good, or if it is different every time, or if it does not mean anything ... Nothing has happened ... [Triantaphyllos: that is?] I want to ask whether the team that you gather to build a building, if anything happens between the team from the beginning to the end of the building.

- Triantafyllos: Yes, things happen. There is a bonding together. A human bonding. If it does not exist, the work will not succeed easily. If the team are not very good among themselves, the work will not succeed much.

- Iliona: Do they have to start by being good at the beginning or does it happen somehow in the middle.

- Triantafyllos: Not all people are ready to accept some things. It is one thing to go forward as you say. But in a group, let's say there are eight people, there will be at least five ... they are not all like me ... but there are some like me ... very many who love what they do and are interested and want to do better and you are happy ... when you do good. That is how our job is, and a soon as you place a nice stone ... I do not blame everyone ... I'm not saying that all the masons are not interested, most masons are ... Stone is not like bricks or plastering or something else that is always the same. The craftsman rejoices once he puts a nice stone. And to the one who does the chipping, I tell him, "the stone that you chipped is really nice, it set well here", and then he likes it more. And he makes an effort int he next phase to do it even better. That's how the team works. Slowly you bond into it ...

- Iliona: You bond (fall in love) into the job. That is, does the work bring this bond (love)?

- Triantafyllos: Yes. I worked for ten years with people, with a team. They were fifteen .. although we were not always the same. There were twenty people ... I might work six months with eight people, I don't know. You may not have a good relationship always. There are ... human relationships. However at the time of work, because we paired up …. myself, I was working with someone, with Vasilis ... [Iliona: Ah, interesting] we could say, yes ... interesting. You should see how the …..work. I was working with someone, now let's say it's Vassilis, I may have an argument with him. We didn't always get on well. But we always worked well in the team. Although we were ... we had disagreed before or argued, he would do the right thing in the work to do to help me. He would make me very nice stones, for me to be able to build well. This is the bonding of the team, if that's what you mean. Many teams, yes, that's how they bond. The team must be bonded together.

- Iliona: And the relationship with the landscape. When constructing the building do you have a relationship with the landscape? When you are not building, when you are vacationing, when you have other work with your car, or who knows, does the same relation to the landscape continue, or is it different?

- Triantafyllos: Yes, I told you before at first. For me after a certain age, remember that I told you in the first question, the relationship with the landscape is continuous with the stone. When I am with my wife on holiday I want ... I see stone buildings, I see churches, I stop to see them ... I like to see the stonework ... In another village where I will go to Greece, I don't know, you go to Peloponnese, somewhere else, I want to see everywhere ... I like to see, to observe the stone and the landscape.

- Iliona: Indeed. And in your opinion the young masons, the young builders who start the building ... during the building, do they grow up ... do they ... you said it ... you said it before, grow up, they mature ... [Nadia: they mature through this, those who have been involved].

- Triantafyllos: Those who have been involved with the stone?

- Iliona: Yes. For the duration that you are building the house, let's say. During this time, you see the young man, between starting and finishing, maturing more?

- Triantafyllos: Yes, of course. During a house there is little time. It

is short duration. For a house only. It takes a duration of time. And especially this stone, this work, stonemasonry, takes a lot of time for you to mature. It's a work that's ... you're constantly learning something. Every day. It is not a standardized job, like plastering or brickwork. Or like ... plasterboard or anything else in construction, which is standardized. It's a job that needs ... every day you yourself learn something. And you mature slowly, slowly. That is, if in another job in construction, in two or three years you have become an experienced and mature craftsman, you can not say the same for stonemasonry. Because you always meet new things. Not like the on first day ... you have already practiced ... you already have some experience that you carry on the job, but you never stop taking up other things and to continue to mature more. It is the nature of this work.

- Iliona: And the craftsmen with stone, is there a moment when they say "he has arrived here. Or this one has arrived there. " As we hear about the old days in Europe it was ... they had apprentice and then the mason, and then the Master mason, there were ... [Nadia: a hierarchy] ... phases, phases, stages ... [Nadia: phases you spent growing up] stages ... [Nadia: now you have learned ... they trust you more afterwards ...]

- Triantafyllos: Yes this is exists in stonemasonry ... [Iliona: does it still exist in stonemasonry?] ... more than any other job. And you go very slowly. That is, you will first be in a job, as they used to say in old times ... let's go to the Boulouki (stonemason traveling team), I don't know, in olden times or even now, you wouldn't ... you could never build straight away. They wouldn't let you and you don't know how, you can't. Therefore you will chip/shape the stone for quite awhile. After that you will become, they will get you to build a simple wall, as Nadia said will trust after that to do ... they will never put you on making a corner.

- Nadia: But I imagine that the chipping by itself until you master it, until you can say "Ok, I've done it with the different stones" and all of that, it's ... it takes a lot.

- Triantafyllos: It takes time. And too many masons that I have worked with only did one or two types of stones. I was very lucky that because I worked in Athens in a large workshop, with up to thirty men, let's say, I had worked on over twenty stone designs. That was a very large workshop ... and we were working on big houses in Athens, in Ekali, and you were working on twenty different types of stone from all over Greece. And from Europe, perhaps, from Spain and other countries, so you benefitted. A lot of experience in chipping/shaping came to you. it comes slowly slowly, and such is the nature of

stone that the masons will not trust you, nor the architect. They will tell you at first, "You will make plain stones. Afterwards, you learn how to make corners" which is difficult. Then you will make an arch. As we said, before the arch is at the very end. A good (mason)… [Iliona: the arch is the final?]. A man can do the chipping work for twenty years and they never let him make an arch. If a man does not want to learn it by himself, he does not want it. [Iliona: And the dome? Is it...?] ... he has no wish for it. [Iliona: and the dome is ultra-final!] Yes, like the dome, the vault and the dome. If he has no desire by himself to learn, he will never get there. That's why some people in stone masonry stop at some point. That is, say that he is at 7, at 8, at 9, but he won't go any further. Because you have to want it yourself. [even if] He is able to do it. There are many who can't do it. There are many whom you tell, we'll do it like this and like this, but they can't do it. And then what we were saying about the hierarchy at work ... now I put you to, let's say, stone, then the corners, then vault and dome. Then after that you must build. No one will in stone masonry will ever put you to build a house right away. They'll get you to make a small wall. Then, after you have been building the wall for a while, they will trust you to make a corner. The corner is a difficult part of the house. And windows, doors and slopes and small arches. It takes a long time. Of course, time depends on the craftsman, how much he wants to learn. That's what we said before. For example, I did it very early. By the thirty I had already built, I had already made arches. Another person may take a long time. Either because don't they trust him, or because he does not show that ... in order that they trust you, by yourself you must show that to want to advance. You must ask from within yourself to do something more beautiful, better.

- Iliona: And the Master mason who has arrived up there, doing arches and the dome and everything, will he still work with the stone now and then, at least. Or will he just tell others "do it like that"?

- Triantafyllos: If a working group has a lot of experience, they can prepare the material for him and he goes and builds. Because there is a lot ... there is specialization now ... and in olden times ... some were building and others were the chippers (prepared the stone). There were the simple chippers. The Master mason would not go to that ... there was a hierarchy. Stonemasonry was a very hierarchical job. There was a chipper that the Master mason had to make a plain stones for the bridge. The other would do ... there was a better guy who would make the corners too, and a very good chipper, who would be a partner, a very close co-worker of the Master builder, would make the arch of the bridge. And he would have trust in him. And he could also do the chipping, of course.

- Iliona: Because he has gone through all these phases? [Triantaphyllos: Has he gone through these phases, yes] But he usually did not sit down to do this [Triantafyllos: To do chipping?] ... he did a little here, a little there with the craftsmen.

- Triantafyllos: Yes, he must oversee everyone. But with his experience he has to supervise everyone to do the job properly. You also have to choose good co-workers. And that's one of the Master mason's jobs. To be able to choose the good people, or to place each person correctly, in the right place in the job.

- Iliona: Yes, to make the team. To make the Boulouki.

- Triantafyllos: To make the Boulouki... it needs experience.

- Iliona: Well, thank you very much.

- Triantafyllos: I do not know if I helped.

- Iliona: Very much! They are ... precious words, words that one does not hear elsewhere ... I can not hear such words (elsewhere). Thank you very much!

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Boulouki 5 - Costas Tarnanas (Κώστας Ταρνανάς)

[INTRODUCTION]

Iliona: I would like to ask you, what is you name?

Tarnanas: I am called Kostas Tarnanas

Iliona: And do you give me the right to use your words in my doctorate - PhD?

Tarnanas: I give you the right to use both my name and my words.

Iliona: Thank you very much! So, Mr. Kostas, you are a Mason, perhaps a Master mason I am not sure, with a lot of experience, from the time that you were with your father as a child. I would like, of course, to learn many things about your life, but for my PhD in particular, I am interested in the feelings of the masons in relation to the material and the weight/gravity of the material, and about the team, the Boulouki team which builds. I have here six questions. The first question is whether you observe a different relationship between yourself and the landscape (the *topos*) when you are building and when you are not building - when you go about your everyday life.

Tarnanas: When I find myself in a place/landscape/topos which has stone buildings, I think that I am one with the place/landscape/topos. And since I grew up in such a landscape this helped me to extend my artistic ability with stone. I think that the landscape plays a big part in the practice of stonemasonry arts/techniques.

Iliona: So it is not necessary for you to be at work to have this feeling for the topos/landscape. You can simply be in a village which is constructed of stone.

Tarnanas: Yes, but it is also on the work site, since I grew up in that kind of environment, I try, no I try …. working with stone reminds me of my childhood years, my toys, the …. and it gives me enjoyment and strength to work with this material.

Iliona: Indeed, thank you …..

Tarnanas: Do you know what 'meraki' is?

Iliona: What is 'meraki' ?

Tarnanas: Interest, joy

Iliona: 'kefi'? (enthusiasm)

Tarnanas:. 'kefi'

Iliona: How has building with stone changed you - if it has changed you - from the first day that you started to do it until now?

Tarnanas: It has changed me a lot. In my character, when I started to work with stone, I was not at all civil. I was wild, I fought with people, if you bothered me a bit! By working, it changed my character and I became so calm that I cannot fight with any man any more, whatever he says to me!

Iliona: Thank God!

Tarnanas: Yes, yes! Really, I was a very naughty child when I was small. From seventeen years old and beyond, when I started to work with stone, I calmed down and now I have understood after many years, that it was this which calmed me, there was no other reason. Because you are so devoted to the work, to chip/shape the corner, to make the dome, your mind must work continuously, the work takes you there, it forces you to calm down, because you are very focussed.

Iliona: When you build with stones, is there a certain moment ….. is there some …. I'm looking for the Greek words …. Perhaps there is a point/marker

on which you focus your mind …. That is, when we make a round building, like the domes which I showed you, we have a central point and somehow I notice that people …. of course I don't work with masons who have experience, I teach students of architecture and other subjects …. but I notice that this point/ marker somehow focuses/ gathers them. Since it also focuses/gathers together the natural material. [Tarnanas: The design...] The design, yes … and they focus/centre [Tarnanas: their mind] their mind there. They have also told me such things, because I interview them. But on other forms of buildings, not only domes, I wonder if the mason has something which focuses/centers him … whether that is the Master mason …. in the beginning, let's say, not at the end when you are yourself a Master mason …. but in the beginning, is it the Master mason whom you have in mind - that he wants me to do it like this - or it is, I don't know, something like that … or something else. It could be the client, the neighbor, the stone, your wife, Jesus Christ, God, the income …. I don't know, but I wanted to learn if you can think of what focuses/centres a man doing this work with a team, in a team.

Tarnanas: Does he centre/ground him in order to do the work, or because he is the individual who is in command?

Iliona: Yes, he does the work, but to do it well in a Boulouki , in a team, to be part of a team and to do a good job for the building.

Tarnanas: I have not understood the question very well now, but …

Iliona: You told me that you had calmed down over the years and it is because you you got into this work, so that perhaps you have answered the question. That you get focussed/centered on the work itself. [Tarnanas: Ah! I understand what you mean!] your mind is focused. You are focused [Tarnanas: Yes] you know what that is? [Tarnanas: focussed] Yes.

Tarnanas: This does happen. The whole day that you work, and even into the evening when you drink your cup of coffee to relax, your mind does not relax, it is thinking about the next day …. How can I do this …… how can the work go ahead, what problems do I have, how will I begin tommorow. Therefore, you must first have the work that you are doing in your head, not on paper, in your head, so that you can put it into practice in reality. Paper doesn't say anything, especially with stonemasonry. The architect or engineer cannot make a drawing of how the stone must be worked. It is in the mind of the mason.

Iliona: You must understand it within yourself before you bring it outside.

Tarnanas: Yes. And how the dome must be tied together to be correctly built, to stay firm, for it not to fall when you take out the formwork. And the wall, for you to put on the roof and the house not to fall down. You work these things out in your mind first and then …..

Iliona: And in the team. Must there be a Master mason, though?

Tarnanas: Yes. In a team there must be one …. The person who thinks the most, he should be …. the commander who does … who will get each person to work, who knows in collaboration who can do what. Because there is also the problem of time and the problem of payment.

Iliona: Well yes! Someone is paying ….

Tarnanas: Someone is paying and you must do this correctly.

Iliona: For both the time and the materials.

Tarnanas: Yes. You have this too …. I want to lower it …. I need 30,000 EU to build the house. You have to coordinate the workshop/collaboration to produce … so that you can get in there and get paid yourself. All these must be worked out in the head of the man in charge. The Master mason, that is.

Iliona: Indeed. Has this focus changed with the years or is it more or less the same? Where do you focus while you are working?

Tarnanas: The same ….

Iliona: The same. Alright. The other questions, the next one …

Tarnanas: Excuse me. This focus changes is relation to the difficulty of the work. If the work is easy, it does not occupy your mind as much. Because you go to work in the morning and in one minute you solve the problem. But when the work is difficult you must work on it in your mind the previous day, what you will do the next day.

Iliona: Yes. I understand. However, the time that you are working with the stone, with the hammer and so on, is it always in your mind how …?

Tarnanas: How I can make it ….

Iliona: Or does it go elsewhere ….

Tarnanas: Elsewhere, elsewhere ….. and again onto the work ….

Iliona: Different dreams ….

Tarnanas: No, no. It only goes to the work. It is possible that, preparing a

stone, I might think of a detail where I should do something on the building. Right then when I am chipping/shaping. I might be singing, but I am thinking!

Iliona: Ah, I get it! As if you are designing?

Tarnanas: I design on it (the job), yes (…[Iliona: in your mind] in my mind, yes. How I could do something else. I have the work in my mind. The entire work/building.

Iliona: Yes, yes, great! Then you have answered the other question, because it is as follows; whether you have a direction, or …. we say motivation, some reason why you do it. Direction in the work and what is that direction, or maybe there is no direction, you simply do it because you like it and it is your life, I don't know.

Tarnanas: No it is not only the practice of the work, about getting paid so you can live only. There must be passion, you must enjoy what you do. If you don't have this you can't do correct works. If you only think about the pay, to live that is, you can't do difficult works. You must love what you do, and have passion for what you do.

Iliona: And usually in a Boulouki team are all the people like this?

Tarnanas: No! The Boulouki leader, it is from this passion that the others make him the head, since he has this joy in the way he conducts himself. And to those around him, as well as on the job, he gives solutions continuously. And quick solutions. Because if you go along slowly it costs money.

Iliona: Yes. So the leader has the passion.

Tarnanas: Yes, yes.

Iliona: And the others might have or they might not have, but the good ones have it.

Tarnanas: The good ones have it. They also become heads of the Boulouki. Those who have this passion and they later rejoice in the work that they have finished and they are proud of it.

Iliona: Indeed, great …. now in each building or each place that you work, do you see any difference in the relationships between the people from the beginning to the end of the building works?

Tarnanas: Yes, I see it. [Iliona: What changes?] When the work falls behind people don't know how difficult this practice of working with stone could be. They don't have the feeling that it takes time and a lot of exhaustion and a lot

of concentration/focus, as we said earlier, to do this work. Most people are in a hurry. They say, haven't you finished yet? But to do proper work it takes your time. People who don't have any feeling about this work, they cannot understand it. And many times they say, 'come on, finish up!' 'No, I don't finish, because I want to do it as I want it. So that I am happy with it, and you too later!'

Iliona: These are not good relations then, between people.

Tarnanas: Eh, yes.

Iliona: In this situation.

Tarnanas: In this situation. Many times … [Iliona: because they are afraid of difficulty...] yes …he who is paying, that is, the boss … [Iliona: They think it will be…] the one who pays, the boss ... anyway, we say we want € 10,000 to do that. OK? I set up the timing. It will take me as much time as it takes me. The one who pays me will not tell me, how much time take. To do it correctly I can not figure out exactly how much time. It may go on a month longer depending on the project. Many times they say 'Come on, finish!' 'No, I'm not finished, because I have to do what I have to do.' And many times, even in the payment, before the end of the project they do not pay you, but we finish the project and say 'we'll make a loss anyway!' Because we want to be happy first of all with what we do. And we wait for our pay later ... many times we also lose money.

Iliona: So the team is very close to you. Very …

Tarnanas: No, no!

Iliona: No?

Tarnanas: The head mason takes the responsibility. If the work is not paid for, those who work and are paid daily, I must pay them myself. If I lose from the work, I take the money from my own pocket and I pay the wages. I lose double. I don't only lose what I didn't receive, I pay as well.

Iliona: Alright. This question is a bit different, but it is good that you told me about this situation.

Tarnanas: The relationships other than the boss? The people around who see the work?

Iliona: Yes …. no …. the team between each other. Maybe they don't know each other before they start working on the building.

Tarnanas: Yes, many times they don't know each other and … the second person after the mason, the Master mason, who is myself for example in the

Boulouki team that I have, the second whom I have, for many more years, and I think he is the second, if someone else comes he may challenge him many times. He goes against him. [Iliona: how can it become ...] For him not to become … for the other one whom I took (employed) not to progress and he goes …. even if this one is better. They try to hold on to their place. For the pay, certainly, and for the benefit. But for the subject of passion and if they they like it first …. they don't have a single …. They guys want to get paid. And all the other responsibility is on the chief mason.

Iliona: Yes, everything is on the mind of the chief mason.

Tarnanas: Yes, all these thoughts are in the mind of the Master mason. Also about the work and money. How he will pay his workmen, how he will earn money …

Iliona: And the relationship between them …. perhaps … whether they are jealous, or whether they work well together, if they have the same rhythm ….

Tarnanas: They get jealous regarding their pay, because someone who is better will get paid better, you see? Some have an antagonism, about who will do the best work. Other times the one who can become a mason, is obvious from the first moment. In one or two years someone who has passion and a "good eye", becomes a mason, and he cuts him off. There are others whom you have for ten or fifteen years and they can't catch up with him who became a mason in two years. It is a question of talent.

Iliona: Another question, do you know, but let's record it …. if there is a certain moment, either in your career, or in a … in the period that you are constructing a building, whether there is some moment when the stone seems more easy, it has … it is not as heavy as before … and what is this moment?

Tarnanas: There are such moments, when the work is hard and you manage it and you make it. Then every stone that you manage to set brings you joy, as we said earlier, and you create the work, as it should be, everything gets lighter! Even when you sit at a little distance to admire it, you feel rested.

Iliona: Is there a relationship between this happiness and the strength that a man has to lift a stone?

Tarnanas: Yes it does. A great relationship.

Iliona: And with the balance that he has with gravity. That is, when someone is stressed/anxious his legs hurt, his hands. Because you are pulling the weight.

Tarnanas: Us … we don't know stress/anxiety. We just don't know stress/anxiety…

Iliona: Yes, because anxiety makes the stone heavier. Is that it?

Tarnanas: Yes. If you are stressed/anxious you can't do anything. Neither does your mind work …. we don't know anxiety. The stone guides us to be so focussed/centered, that we don't think. Neither stress, nor grief, nor …. we think only about the joy which we shall feel when we put that stone there and we can say, "Bravo, I did it and I like it as well"!

Iliona: And you are always two steps ahead ... Do you have the feeling, we say intuition about where the stone wants to go? [Tarnanas: Yes, I have it] Where is its correct place in the building in the relation with the weight of the building and so on. Do you have an instict?

Tarnanas: Yes. The good mason, when he works on the wall there in front of him and he has 100 stones behind him, around him, he must know at least 50 of them. This stone is here, that stone is there ... That is, you first take stock of them by eye, what stones you have around you, and then when you build you know that this stone is to your left. You turn, you take it, and 'tak' you set it in place. If you have to sit around and search you can not produce work. You can understand this, when you sit down and observe a mason who knows his work, and I'm telling you this as one, that while he is building he just he turns around, takes a stone and 'tak' he sets it in place. [Iliona: quickly ...] Yes, he knows where that stone should go. [Iliona: Yes! he knows where it should go ...] and I know that behind me I have in mind the shapes of the stones ... I have in my mind that 50 stones are with a certain shape. And I know that I when I will turn around and take a certain stone, I'll put it where it shows in the wall construction, that this stone must be set. But I have in mind that behind me I know 50 stones and their shapes. [Iliona: 360 around] Yes, yes. In my mind I have [Iliona: all around you] ... I have .. [Iliona: it shows where the stones are and where they want to go] I have the wall that I'm building in front of me and I have the stones behind me, but I know behind me the shapes of the stones. And when the right place is made in the building works where a certain stone should fit, I know that I will turn around, take the stone and put it in, with one glance. Nothing else. Whoever sits around hitting stones all day, doesn't get anything done.

Iliona: This and in relation to the first question I said about the landscape, your relationship with the landscape ... Some people think that when you build a landscape around you, you cut your relationship with the landscape. While

I, as an architect, believe that we should build buildings that give us ... the wall does not ... [Tarnanas: To give the feeling of the landscape] ... to pull us into the landscape ... and that the wall does not it is something that divides, that ... Yes, that closes you or that makes this go away from the other. And, yes ... that question.

Iliona: This has a relationship with the first question that I asked about the environment, the landscape (*topos*)... Some people think that when you build a place around you that you cut off your relationship with the environment. Instead, as an architect I believe that we must build buildings that give us ... where the wall doesn't ... [Tarnanas: To give the feeing/experience of the landscape] ...it should pull us into the landscape .... and that the wall is not something that divides, that ... [Tarnanas: not a prison, that closes you in...] Yes, that closes you in or that makes one thing distant from the other. It unites the two sides. [Tarnanas: Yes] So this is the question. Whether you are locked inside a stone house, or you have the feeling that you are closed off from the environment, or you have made a zone in which you may perhaps be in another place but you are in some relationship with the outside ..

Tarnanas: An absolute relationship. Absolute relationship with the external environment. When I am in the stone house of my village, I feel that I am in the mountains, in the whole landscape. When I was in Kozani in the apartment, I felt imprisoned. I did not like it at all. Not at all, I could not ...

Iliona: In relation to the sun, the moon, the wind ...

Tarnanas: Yes ... no ... the stone house for me is the ideal environment for a person. You look outside and you sit and observe the dear stones and how they were constructed ... you observe ... That is, you have something to study, to spend time on. Just looking at the stone. You know how you light a fireplace and sit and watch the flame play? [Iliona: Yes, right!] That's how an old stone house is, when you sit and look at it, you say ... you notice every little stone and ... [Iliona: There is a dream within in ...] Yes, a story withiin it ... and you say 'Look how he did that ...' And you try to copy the technique as well.

Iliona: It takes you out to the mountains, to other places ...

Tarnanas: Yes! That is exactly how it calms you down. It is not only practicing the stone-mason's craft that calms you down. The building that you see also gives you peace. Someone who does not practice the stonemason's craft, but who observes a stone building, would be interested I think to practice it just by looking at it. That is, he spends time observing it …[Iliona: I am looking for this in the art of the architect] ….. for it to give him peacefulness.

Iliona: Yes, for sure. Not everyone can become a mason ….

Tarnanas: Certainly not …!

Iliona: But they can live in houses which give them certain feelings. From the masons in this interview, I wanted to know from you and from others who know this material, this craft, about the feelings, the life of the Boulouki team. I think that even those who live inside the buildings which have this aesthetic, even if they aren't masons, can get some benefit.

Tarnanas: Yes! It helps them with both psychological peace and with many other things. That is, it makes you a peaceful human.

Iliona: Thank you very much

Tarnanas: Be well!

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CATALAN 1: Interview Q.&A. with Salvador Gomiz Avino, Catalan Master mason, Spain

Iliona: - I'm interested in your feelings about building with masonry (stones, earth, bricks etc.) and "gravity". Firstly, how has building with masonry changed you from the first day you started until today?

Salvador: - it has changed me in knowledge, I have evolved as a mason

Iliona: - Do you notice any difference in your relationship with the land/place/"topos" when you are building, and when you are not building (just going about your everyday life).

Salvador:-I need to build to feel good, I need to be in touch with the earth's materials

Iliona: - When you are building with masonry, is there "a point of reference" in your mind, and if so what is it? ….the building centre point, the Master mason, God, the client, a holy figure (Jesus Christ/the Prophet Mohammed/a guru or other holy person), the materials itself (stones, earth etc.), your wife, the house, or the project)? If so, has this reference point changed over the years? Is it present everywhere on the building site or only limited in location?

Salvador:- I think of my father, who passed away to the cemetery when I started working on this technique.

Iliona: - Do you feel a direction of motivation while you are building or not? If so, what is that direction?

Salvador:- my motivation is to see the result of my work.

Iliona: - On every "build" or job site, do you notice a difference in the relationships between the builders from the beginning to the end of the "build"? If so, can you say how the relationship has changed?

Salvador:- Yes, I find people very friendly or very envious, many builders say they know how to do the same as me, but they don't.

Iliona: - Is there a moment, either in your career as a builder, or over the period of a single building, when the material (stones, earth) that seemed heavy, suddenly seemed to become light?

Salvador:- Yes, the vast majority of my work, when I finish, they seem lighter.

Iliona: - Is there a feeling/intuition that you have about where is the "right" place to put a brick/stone/earthbag, by feeling what the earth/gravity wants?

Salvador:- Yes, it is something that I notice when I am making a vault, I know where and how to place it just by seeing it. I know this happens to me and not to other masons because they don't do it like me.

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APPENDIX B: SOUGITHA HYMN TO HAGIA SOPHIA, EDESSA (6C AD)

The original text is written in Aramaic.

The following is the translation from Mango, C. ed. (1972) *The Art of the Byzantine Empire 312-1453: Sources and Documents*. New Jersey: Prentice-Hall, pp. 58-59. I have added the bracketed words, which are the transliteration of the Aramic letters, each of which has the numerical value corresponding to the verse, as 1,2,3, etc.

[1. Ālaph]
Oh Essence which residest in the holy Temple, whose glory comes from Thee by nature,
Grant me the grace of the Holy Ghost to speak of the Temple of Edessa.

[2. Bēth]
Bezaleel it was who, instructed by Moses, erected the tabernacle to serve us as a model,
And now Amidonius, Asaph and Addai have built for Thee at Edessa this glorious Temple.

[3. Gāmal]
Verily, they have represented in it the mysteries of Thy Essence and Thy Dispensation,
And he who surveys it minutely is filled with admiration at its sight.

[4. Dālath]
Indeed, it is an admirable thing that in its smallness it should resemble the great world,
Not in size, but in type: waters surrounding it, as the sea (surrounds the earth);

[5. Hē]
Its ceiling is stretched like the heavens – without columns, vaulted and closed
And furthermore, it is adorned with golden mosaic as the firmament is with shining stars.

[6. Waw]
Its high dome is comparable to the heaven of heavens;
It is like a helmet, and its upper part rests solidly on its lower part.

[7. Zain]
Its great, splendid arches represent the four sides of the world;
They also resemble, by virtue of their variegated colours, the glorious rainbow of the clouds.

[8. Khēth]
Other arches are set around like some outcrops of rock on the top of a mountain;
It is on them, in them and by them that the entire roof is joined to the arches.

[9. Ṭēth]

Its marble is like the Image not made by human hand, and its walls are harmoniously covered therewith;
All polished and white, (this marble) is so shining that it gathers light within itself like the sun.

[10. Iodh]
It roof has lead upon it that it may not be damaged by rainfall;
It contains no word whatever, and appears to have been cast in one piece (although it is) of stone.

[11. Kāph]
It is surrounded by magnificent courts having two porticoes formed of columns;
These represent the Tribes of Israel that surrounded the Tabernacle of Witness.

[12. Lāmadh]
On each side it has an identical façade, for the form of all three is the same,
Just as the form of the Holy Trinity is one.

[13. Mem]
Furthermore, a single light shines in the choir through three open windows,
Announcing the mystery of the Trinity, Father, Son and Holy Ghost.

[14. Nun]
And on its three sides light is produced by numerous windows.
Representing the apostles, and Our Lord, and the Prophets, and the Martyrs and the Confessors.

[15. Semkath]
In the middle is placed on a podium after the model of the upper room of Zion,
And underneath it are eleven columns like the eleven Apostles who were hidden therein.

[16. Ghē]
Furthermore, the column behind the podium represents Golgotha by its form,
And above it is affixed a luminous cross, like our Lord between the Thieves.

[17. Pē]
Furthermore, five doors open into it after the likeness of the five Virgins,
And through them the faithful enter with glory, like the (wise) Virgins, a splendid legion.

[18. Ṣādhē]
The ten columns that support the Cherubim of the choir
Represent the ten Apostles who fled at the time when our Lord was crucified.

[19. Qoph]
The form of the nine steps that are placed in the choir as well as of the throne
Represents the Throne of Christ and the nine orders of angels.

[20. Rēš]
Exalted the mysteries of this Temple concerning the heavens and the earth: in it is represented schematically
The sublime Trinity and the Savior's Dispensation.

[21. Šin]
The Apostles, who are His foundations in the Holy Ghost, the Prophets and the Martyrs are schematically represented in it.
May their memory abide in the heavens above by the prayer of the blessed Mother!

[22. Taw]
May the sublime Trinity that has given strength to them that built this Temple
Guard us against all evil and deliver us from injury!
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The following is an alternative translation by McVey, K (1983) *The Domed Church as Microcosm: Literary Roots of An Architectural Symbol,* In: Dumbarton Oaks Papers, Vol. 37, p. 95 Boston: Dumbarton Oaks, Trustees for Harvard University.

Oh Being Itself who dwells in the holy Temple, whose glory naturally [emanates] from it,
Grant me the grace of the Holy Spirit to speak about the Temple that is in Urha.

Bezalel constructed the Tabernacle for us with the model he learned from Moses,
And Amidonius and Asaph and Addai built a glorious temple for You in Urha.

Clearly portrayed in it are the mysteries of both Your Essence and Your Dispensation.
He who looks closely will be filled at length with wonder.

For it truly is a wonder that its smallness is like the wide world,
Not in size but in type; like the sea, waters surround it.

Behold! Its ceiling is stretched out like the sky and without columns [it is] arched and simple,
And it is also decorated with golden mosaic, as the firmament [is] with shining stars.

And its lofty dome-behold, it resembles the highest heaven,
And like a helmet it is firmly placed on its lower [part].

The splendor of its broad arches-they portray the four ends of the earth.
They resemble also by the variety of their colors the glorious rainbow.

Other arches surround it like crags jutting out from a mountain,
Upon, by and through which its entire ceiling is fastened on the vaults.

Its marble resembles an image not [made] by hands, and its walls are suitably overlaid [with marble].
And from its brightness, polished and white, light gathers in it like the sun.

Lead was put on its roof so it would not be damaged by streams of rain;
There is no wood at all in its ceiling, which is as if entirely cast from stone.

It is surrounded by magnificent courts with two porticoes composed of columns
Which portray the tribes of Israelites who surrounded the [temporal] Tabernacle.

On every side it has the same fagade; the form of the three of them is one
Just as the form of the holy Trinity is one.

One light shines forth also in its sanctuary by three open windows,
And announces to us the mystery of the Trinity, of the Father and the Son and the Holy Spirit.

And the light of its three sides abides in many windows.
It portrays the apostles, Our Lord, the prophets, martyrs and confessors.

The ambo is placed in the middle of [the church] on the model of the Upper Room at Zion,
And under it are eleven columns, like the eleven apostles that were hidden.

The column that is behind the ambo portrays Golgotha in its form,
And fastened above it is the cross of light, like Our Lord between the thieves.

Five doors open into [the church] like the five virgins,
And the faithful enter by them, gloriously like the virgins to the bridal couch of light.

Portrayed by the ten columns that support the Cherubim of its altar
Are the ten apostles, those who fled at the time that our Savior was crucified.

The structure of nine steps that are placed in the sanctuary of [the church] together with the synthronos
Portrays the throne of Christ and the nine orders of angels.

Exalted are the mysteries of this temple in which heaven and earth
Symbolize the most exalted Trinity and our Savior's Dispensation.

The apostles, [the church's] foundations in the Holy Spirit, and prophets and martyrs are symbolized in it.
By the prayer of the Blessed Mother may their memory abide above in heaven.

May the most exalted Trinity that strengthened those who built [the church]
Keep us from all evils and preserve us from injury.

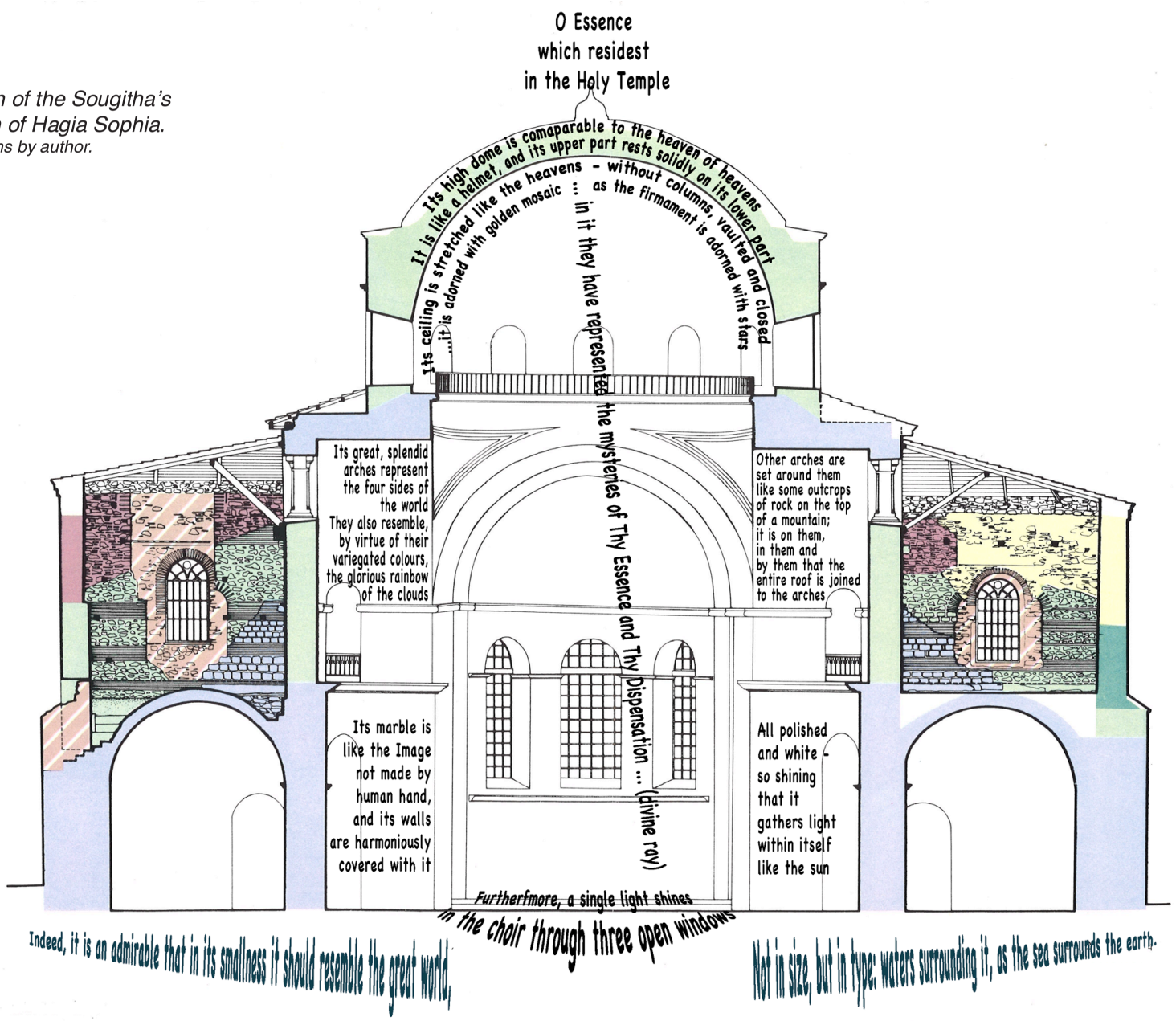


Fig. 1: Author's superimposition of the Sougitha's concepts onto the cross-section of Hagia Sophia.
Source: Theoharidou (1994), annotations by author.

APPENDIX C: An exploration of the timing of Hagia Sophia's construction

Theoharidou (1988) has collected a record of earthquakes in Thessaloniki, of 416, 476, 618, 630, and 813-20 AD, for clues to the church's construction date.[1] She theorises a partial collapse due to earthquake and re-building in the second phase. Taking into consideration everything from the size and markings on the bricks and hydraulic mortar, to the detail of inscription changes on the mosaics in the central dome, and dendro-chronological sampling, Theoharidou gives a final completion date of 690/1 AD.[2] If we accept this date, then the 4th century basilica of St. Mark, which the new Hagia Sophia has replaced, must have been damaged in the earthquake of 618, leading to the first phase of new construction. In turn, the new church must have been damaged by the earthquake of 630, which brought down the central dome, narthex domes, and vaulted aisles. There was then a second construction phase to replace the damages.

The iconoclastic mosaics, in the barrel vault of the sanctuary and the gold background around the *Theotokos* in the apse bear the Imperial monogram which most sources date to 787 AD, the Emperor Constantine VI and Empress Eirene of Athens.[3] Theoharidou's timing implies a leisurely 60 years to complete the second construction phase after the earthquake damage. After that, either there were some early Christian mosaics of which no trace remains, or the church remained undecorated for nearly 100 years until the iconoclastic mosaics were done.

The Greek Orthodox ecclesiastical authority states that the church was completed during the reign of Emperor Leo III 'the Isaurian' (717-741), presumably in its second phase. This would extend the reconstruction phase after the 630AD earthquake by around 100 years unless the collapse of the first phase is attributed to another cause, but it makes the timing of the mosaics more plausible. Velenis dates the first phase of construction of the cathedral to after the reign of Leo III and the second phase between 814 and 840 AD.[4] In his monograph on the mosaics, he includes a possible timing of the first phase of construction during Constantine V and his wife Eirene the Khazar.[5] He attributes the partial col-

1. .

2. Theohariou's research shows how the Acheiropoeitos basilica and the Rotonda repairs were done with hydraulic mortar, of the same type as is found in Hagia Sophia. As this mortar type has not been found in previous buildings, this lends support to her dating of the first phase of construction, after a catacysmic seismic event. (1988, p.130)

3. Velenis (1997) does not rule out that the mosaics bear the Imperial monogram of the earlier Emperor Constantine V and his wife Empress Eirene 'the Khazar'.

4. Velenis, G. (2003) *Μεσοβυζαντινή Ναοδομία στη Θεσσαλονίκη* [Middle Byzantine Churches of Thessaloniki]. Athens: Akadimia Athinon [Academy of Athens, Research Centre for Byzantine and Post-Byzantine Art].

5. Velenis, G. (1997) *Η χρονολόγηση του ναού της Αγίας Σοφίας Θεσσαλονίκης μεσα από τα επιγραφικά δεδομένα* [The dating of the church of Hagia Sophia in Thessaloniki through the epigraphic data] In: City of the Thessalonikans, texts and sources of 6,000 years, Thessa-

FIG. 2 *Table by author*

CHRONOLOGY AND CONTEXT AROUND THE BUILDING OF HAGIA SOPHIA, THESSALONIKI.

305-311: GALERIUS EMPEROR. CONSTRUCTION OF MULTIPLE MONUMENTS IN THESSALONIKI, INCLUDING THE TRIUMPHAL ARCH, HIS PALACE, AND THE ROTONDA.

306-337: CONSTANTINE I EMPEROR. 313: SIGNS 'EDICT OF MILAN' WITH EMPEROR LICINIUS, PROCLAIMING RELIGIOUS TOLERATION, STOPPED PERSECUTION OF THE CHRISTIANS. 330: FOUNDS THE NEW CAPITAL OF CONSTANINOPLE ON EARLIER BYZANTIUM. EUSEBIUS OF CAESAREA (260/265 – 339/340) WRITES EULOGY TO THE CHURCH AT TYRE.

325: 1ST COUNCIL OF NICAEA RE: ARIANIASM, THE NATURE OF CHRIST, BAPTISM,'INTER ALIA'

379-395: EMPEROR THEODOSIUS I

381: 1ST COUNCIL OF CONSTANTINOPLE RE: ARIANISM, APOLLINARISM, SABELLIANISM, THE HOLY SPIRIT, 'INTER ALIA'

395: ROMAN EMPIRE DIVIDES IN HALF - THE EASTERN EMPIRE BASED IN CONSTANTINOPLE AND THE WESTERN EMPIRE BASED IN ROME/RAVENNA.

401-450: EMPEROR THEODOSIUS II

416, 476: EARTHQUAKES, EPICENTRES THESSALONIKI AND THRACE RESPECTIVELY

431: COUNCIL OF EPHESUS RE: NESTORIANSIM, THE THEOTOKOS, PELAGIANSIM, 'INTER ALIA'

450- 457: EMPERORS MARCIAN (EAST) AND VALENTINIAN III (WEST, UNTIL 455)

451: COUNCIL OF CHALCEDON RE: THE DIVINTY AND HUMANITY OF CHRIST, 'INTER ALIA'

476-493: THE WESTERN EMPIRE RULED BY A NON-ROMAN, ODOACER, OF GERMANIC DESCENT

CIRCA 500: DIONYSIOS THE PSEUDO-AREOPAGITE, THEOLOGIAN WHO BROUGHT TOGETHER NEOPLATONISM AND CHRISTIANITY, IMPORTANT TO THIS THESIS.

527-565: JUSTINIAN I EMPEROR, THE LAST 'CAESAR', RECONQUERS AFRICA, ITALY, AND SPAIN. ROMAN LAWS (THE THEODOSIAN CODE) RE-CODIFIED INTO ONE DOCUMENT. 500,000 INHABITANTS IN CONSTANTINOPLE. JUSTINIAN AND THEODORA BUILD HAGIA SOFIA. MANY BUILDINGS AND FORTIFICATIONS THROUGHOUT THE EMPIRE, 1ST MAJOR OUTBREAK OF BUBONIC PLAGUE.

553: 2ND COUNCIL OF CONSTANTINOPLE RE: NESTORIANISM, MONOPHYSITISM

553-554: 'THE SOUGITHA' SYRIAC HYMN IN ARAMAIC DEDICATED TO HAGIA SOPHIA, EDESSA

557: INAUGURATION EULOGY FOR HAGIA SOPHIA, CONSTANTINOPLE, BY PROCOPIOS OF CAESAREA. PANEGYRIC OF THE EMPEROR JUSTINIAN'S PUBLIC WORKS PROGRAMME AROUND THE EMPIRE, ENTITLED "ON BUILDINGS" (COMPLETED 559).

562: THE 'EKPHRASIS' OF PAUL THE SILENTIARY AT THE INAUGURATION OF THE RE-BUILDING OF PARTS OF HAGIA SOPHIA. (THE HYMN AND EULOGIES ARE IMPORTANT TO THIS THESIS)

568: LOMBARDS INVADE ITALY, TAKING NORTHERN ITALY FROM THE BYZANTINES

580-622: MAXIMOS THE CONFESSOR, THEOLOGIAN CONTINUING DIONYSIOS' WORK

586/7: THE CHAGAN (HEAD) OF THE AVARS ATTACKS THRACE

605: PERSIANATE SASSANID EMPIRE, UNDER CHOSROES II, CAPTURE DARAS FORTRESS CITY IN NORTHERN MESOPOTAMIA, OF GREAT STRATEGIC IMPORTANCE;

606-607: PERSIANS CROSS THE EUPHRATES.

609: HERAKLEIOS BECOMES EMPEROR. THE PERSIANS ENTER SYRIA, TAKE EDESSA, AND GO AS FAR AS ANTIOCH;

613-614 THEY TAKE JORDAN, PALESTINE, AND JERUSALEM, AS WELL AS PHOENECIA; AND THEY ALSO TAKE ALL OF EGYPT, ALEXANDRIA, AND LIBYA AS FAR AS ETHIOPIA;

615-618 THEY OCCUPY ARMENIA AND CAPPADOCIA, TAKING ANCYRA AND GALATIA, GOING AS FAR A CHALCEDON, A FEW MILES SHORT OF CONSTANTINOPLE; .

617/8: BYZANTINES REPULSE THE SIEGE OF THESSALONIKI BY THE AVARS AND SCLAVENI.

618: EARTHQUAKE, EPICENTRE THESSALONIKI. EMPEROR HERAKLIOS MAKES PEACE WITH THE CHAGAN OF THE AVARS TO THE WEST IN ORDER TO MOVE ALL HIS WESTERN ARMY EASTWARDS TO COUNTER THE PERSIANS. AS A FORMER GENERAL, HE TRAINS HIS ARMY.

620-627: EMPEROR HERAKLIOS CAMPAIGNS AGAINST THE PERSIANS.

626: PERSIAN EMPEROR CHOSROES AND THE AVARS TOGETHER BESIEGE CONSTANTIOPLE. HERAKLIOS DEFEATS THEM, REGAINS ARMENIA, MESOPOTAMIA, SYRIA, PALESTINE, REACHING CTESIPHON, THE PERSIAN CAPITAL. PEACE IS MADE WITH SIROES, SUCCESSOR TO CHOSROES.

FIG. 2 Cont.

627-630: HERACLIUS SETS UP THE 'THEME SYSTEM'. OFFICIAL LANGUAGE OF THE EMPIRE BECOMES GREEK. REMOVES THE NESTORIAN PATRIARCH FROM EDESSA, AND BANISHES JEWS FROM JERUSALEM, REINSTATES ORTHODOX PATRIARCH IN BOTH CITIES.

630: PROPHET MOHAMMED DIES. (C. 630) EARTHQUAKE, EPICENTRE THESSALONIKI

631-642: THE MUSLIM ARABS CONQUER SYRIA, PALESTINE, AND EGYPT AND WERE THE VICTORS IN THE FOLLOWING CITY SIEGES (634 -DAMASCUS; 635/636 – EDESSA; 636 - ANTIOCH; 637 – JERUSALEM; 637 –ALEPPO; 638 -GERMANICA; 641 – ALEXANDRIA)

641-668: CONSTANS II EMPEROR

662: THE "FIRST FITNA" AMONG THE ARABS, PEACE WITH CONSTANTINOPLE.

668/9: CONSTANTINE IV BECOMES EMPEROR

671-677: A GREAT ATTACK LAUNCHED BY THE UMAYYAD CALIPHATE CULMINATING IN THE SIEGE OF CONSTANTINOPLE. 672: ARCHITECT KALLINIKOS, A REFUGEE FROM SYRIA, MANUFACTURES 'GREEK FIRE' WHICH BURNS THE ARAB FLEET. THE SIEGE IS REPULSED.

677: PEACE CONCLUDED BETWEEN THE ROMANS AND THE ARABS.

676-678: SIEGE OF THESSALONIKI BY THE SLAVIC TRIBES (SCLAVENI)

686/7: FAMINE IN SYRIA AND 'MANY MEN MIGRATED TO THE ROMAN COUNTRY' ACCORDING TO THE CHRONICLE OF THEOPHANES THE CONFESSOR

680-81: 3RD COUNCIL OF CONSTANTINOPLE RE: MONOTHELITISM, THE HUMAN AND DI VINE WILLS OF CHRIST

685–695: JUSTINIAN II EMPEROR 690: LOSS OF NORTH AFRICA TO MUSLIMS

693: THE ARAB MUSLIMS AGAIN ATTACK CONSTANTINOPLE AND ARE REPULSED

705–711: JUSTINIAN II RETURNS AS EMPEROR AGAIN, PATRIARCH IS GERMANOS

717: LEO III (THE ISAURIAN) BECOMES EMPEROR

717-718: MUSLIMS BESIEGE CONTANTINOPLE, ATTACK FROM THRACIAN SIDE, VERY SEVERE SNOWY WINTER, SULEIMAN DIES AND OMAR BECOMES EMIR/CALIPH, ARABS ARE REPULSED BY 'GREEK FIRE'. THEIR NAVY DESTROYED, THEY DO NOT BESIEGE THE CITY AGAIN.

719-20:YEZID BECOMES CALIPH 1ST YEAR

721: LEO III REGAINS CONTROL OF ASIA MINOR FROM THE MUSLIMS

726-730: LEO BANS THE USE OF ICONS, MOVES THE SEE OF THESSALONIKI FROM ROME TO CONSTANTINOPLE. BISHOPS OF THESSALONIKI (ARTEMIOS AND XYLINITIES) ARE BEHEADED FOR CONSPIRACY WITH BULGARS. LEO WEEDS OUT TRAITORS IN THESSALONIKI'S PATRICIAN FAMILIES.

726 -787: FIRST ICONOCLASTIC PERIOD.

741 - 775: CONSTANTINE V EMPEROR, ICONOCLASM INTENSIFIES.

743: MAROUAN BECOMES CALIPH, 744-745: ARABS IN RETREAT,

745-747: BUBONIC PLAGUE KILLS ROUGHLY A THIRD OF THE POPULATION OF ANATOLIA

746: CONSTANTINE V REGAINS NORTHERN SYRIA, CHRISTIANS FROM SYRIA RESETTLED IN THRACE

749-750: UMMAYAD DYNASTY ENDS, SURVIVORS GO TO SPAIN, ABBASID DYNASTY BEGINS

782-4: EMPRESS EIRENE MAKES PEACE WITH THE ARABS. SUBDUES THESSALONIKI AND HELLAS AND MAKES THEM PAY TRIBUTE. IRENE AND CONSTANTINE TO THRACE, REBUILD BEROIA

787: EIRENE CONVENES 2ND COUNCIL OF NICAEA, RE: ICONOCLASM

787: DEDICATION OF ICONOCLASTIC MOSAICS BY EMPEROR CONSTANTINE AND EMPRESS EIRENE IN HAGIA SOPHIA, ASSUMED TO BE CONSTANTINE VI AND HIS MOTHER EIRENE.

800: CHARLEMAGNE, KING OF THE FRANKS, IS CROWNED "EMPEROR OF THE ROMANS" BY POPE LEO III IN ROME. FOR THE FIRST TIME IN 300 YEARS THERE IS AN EMPEROR OF THE "EAST" AND AN EMPEROR OF THE "WEST"

813-20: EARTHQUAKE, EPICENTRE THESSALONIKI

820 – 829: MICHAEL II "THE AMORIAN" 829 –842 EMPEROR THEOPHILOS

814 -842: SECOND ICONOCLASTIC PERIOD

843: ICONOCLASM LIFTED AND THE USE OF ICONS IS RESTORED. ICONIC MOSAICS OF THE ASCENSION IN THE DOME AND THE THEOTOKOS IN THE APSE ARE COMPLETED BEFORE THE END OF THIS CENTURY.

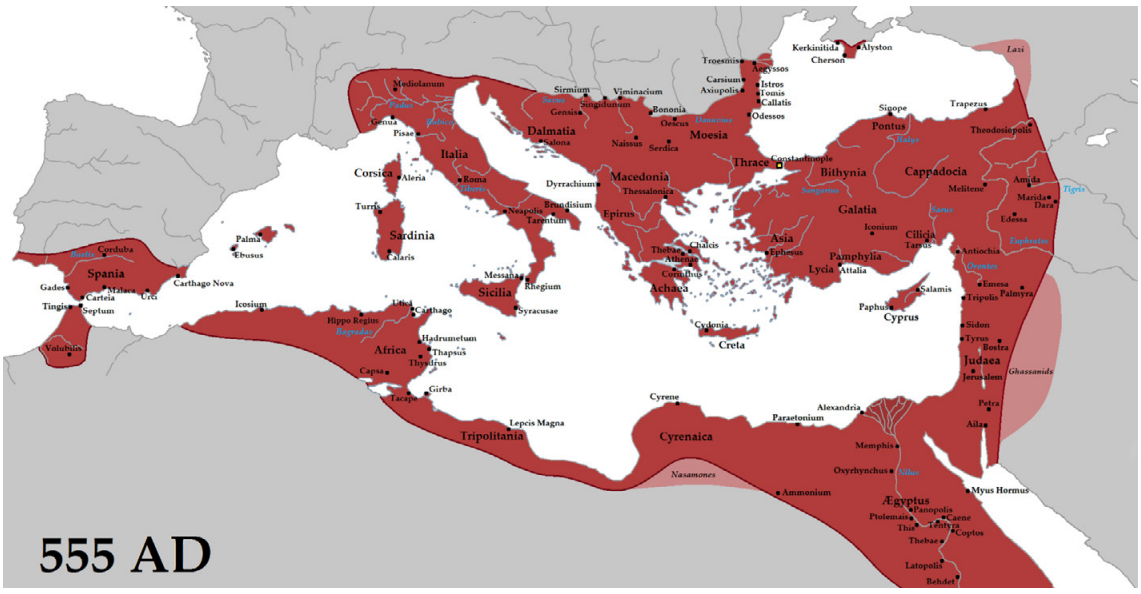


FIG. 3 Above: Map of the Byzantine Empire at its greatest extent during the reign of Emperor Justinian I, before the construction of Hagia Sophia, Thessaloniki.

Available from: https://upload.wikimedia.org/wikipedia/commons/thumb/9/9b/Justinian555AD.png/1920px-Justinian555AD.png [Accessed: 30 August 2019]



FIG. 4 Above right: Map of the Sassanian Empire at its greatest extent under Emperor Chosroes II from 605-620 AD, including Egypt, the near East, and Mesopotamia. The contested territory (orange striped) during the 7th century included the Patriarchate Cities of Jerusalem, Alexandria, and Antioch, the strategic border city Edessa, and the holy sites in Judaea.

Available from: https://uploads.disquscdn.com/images/6cf0f775699b75f5966886c031ed96a766b12a3aaccffa01ebc3b8ada3bd9cf9.jpg [Accessed: 30 August, 2019]

FIG. 5 Below: Map of the Byzantine Empire in 717 AD, after the Arab conquests, showing its extent in 1020, around three centuries after the construction of the cathedral.

Available from: https://nowxhere.files.wordpress.com/2018/04/757535-ec39db439d2a0f049a915194fa3ab06c.jpg?w=1352 [Accessed: 30 August, 2019]



lapse of the first construction phase to the earthquake of 813-20 AD which was centered in Thessaloniki. Since this is after the firm end date of 787 AD for the iconoclastic mosaics, one must assume that the mosaics on the eastern apse and great arch survived the damages and were retained through the second phase of construction which took place between 820 and 840 AD. I would not rule out an earlier collapse as a result of fast construction, followed by settlement and structural deformation due to the large mortar joints and groundwater. This in my opinion fits the pattern of collapsed areas quite as well as a seismic cause. In Velenis' scenario the basilica of St. Mark could have been damaged by the earthquake of 630 AD and stayed that way for a century, awaiting an imperial intitative to rebuild.

Comparing these very different completion dates between 690 and 840 AD, does not bring one any closer to the truth when the arguments are built only around archaeological and technical evidence such as known earthquake dates and types of damages. There is simply not enough data to define the timing of construction. The political and cultural context must be reviewed to improve our idea of when Hagia Sophia was built.

The political context in which Hagia Sophia was built

To build a large public building such as the cathedral of Hagia Sophia, Thessaloniki, other conditions must have been met in the 7-9th centuries such as: the political will and sufficient funding, a suitable client and popular support, a suitable site, the design and structural expertise as well as the construction team, suitable materials, and an available time frame free from war (siege) and natural disasters.

Looking for these conditions, I have compiled the two-page chronology which follows, based on three sources of contemporary history; the *Chronicle of Theophanes the Confessor*, completed in 813/4;[6] *The Theodosian Code* published 429-438 which was an updated compilation of traditional Roman law; letters and eulogies (*ekphraseis*) collected together by Cyril Mango in *The Art of the Byzantine Empire 312-1453* (see fig. 11).

A suitable period in which Thessaloniki was not under siege, and a time in which the Empire was not fighting an expensive war vital to its existence, is hard to find during these centuries (see Figs. 8-10). Thessaloniki was always a strategically important city to the Romans; the Emperor Constantine had even

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loniki: City of Thessloniki [Council]

6. I have used Mango and Scott's translation: Theophanes (1997) *The Chronicle of Theophanes the Confessor: Byzantine and Near Eastern History AD 284-813*. Translated by C. Mango and R. Scott, R. Oxford: Clarendon Press

considered choosing it for his future capital, before renovating Byzantium in 330 AD. Constantine's choice was not only based on religious concerns according to Fontana-Giusti (2012, p. 167), 'The main objective was to create a capital for all inhabitants that would celebrate the imperial rule and provide stability for the Empire spreading east'.[7] In Theoharidou's scenario, the 5-aisle basilica, destroyed in part by earthquakes, would have left an already consecrated site, and a congregation hoping for a new church. However, such a large project with the venerable name of Hagia Sophia, imitating the masonry of Constantinople, would have required authorisation from the Emperor to spend from the public purse and recieve logistical support.

During the 7th century the Christian Roman Empire was continually at war to west and east, with the Avars, Slavs, Sassanian Persians, and Muslim Arabs. It was a century of economic decline and shrinking population due war and to plague. By the end of the 7th century, the empire had lost Africa and the Near East to the Arabs, and Italy was under Lombard rule. It became vital to maintain Thessaloniki as a regional capital. During the 8th century the situation improved somewhat. In the 717-718 siege of Constantinople Emperor Leo III defeated the Arabs and their navy was destroyed. He also came to an accommodation with the Bulgars north of Thessaloniki. He then moved the ecclesiastical jursdiction of Thessaloniki from Rome to Constantinople. At that time the motivation to build a cathedral modelled on Hagia Sophia would have been strong.

Leo's son, Constantine V, was born during the Arab siege and made co-emperor as a small child.[8] Thanks to his father's campaigns the Arabs were in retreat from Anatolia by 745 around the time he assumed full imperial power. In 740, according to Theophanes, a massive earthquake destroyed churches and monasteries and caused the land walls to fall in Constantinople, as well as devastating the cities of eastern Thrace and Bithynia in Anatolia. Soon after, from 745-7 the plague killed an estimated third of the population. Later, Constantine V reconstructed the collapsed land walls with bands of red brick and white limestone, closely matching the earlier work of Theodosius. He accomplished a 're-formulation of the capital' as well as repairing the Aqueduct of Valens after the drought of 766. According to Ousterhout (2001, p. 17),

> Theophanes itemizes the workers involved: one thousand masons and two hundred plasterers from Asia and Pontos, five hundred clay workers from Greece and the islands, five thousand labourers and two hundred brickmakers from Thrace.

7. Ousterhout believes that the Romans felt themselves to be the heirs to Troy, rather than Mycenae, and they gravitated towards Asia Minor.
8. Constantine V reigned in the middle of the 'First Iconoclasm' which was the law between about 726 and 787. The "Second Iconoclasm" was between 814 and 842.

This tells us of the ease with which builders were dispatched across the empire with Constantine's imperial patronage for important civic projects.[9]

> When we add to these activities the construction and reconstruction of churches, the addition of decoration to Hagia Sophia [Constantinople], and the almost complete reconstruction of Hagia Eirene - the second largest surviving Byzantine church in the city - we may begin to suspect a coherent building programme with ideological overtones. (Ousterhout 2001, p. 18)

His father, Leo III, would have been in a good position to intitate re-building Hagia Sophia, Thessaoniki, but probably not to carry it to completion since the pressure on his army was only just easing, and the public purse would have been recovering from military campaigns. His son Constantine seems to have been in better position for a 'coherent building programme with ideological overtones'.

Following Constantine V, his son Leo IV was Emperor until the co-regency of Constantine VI and his mother Eirene, widow of Leo IV. In 783 Eirene sent her general Staurakios to Thessaloniki and Hellas with a large army to campaign against the Sclaviniae. Such was Staurakios' success that in January 784 he celebrated a triumph in the hippodrome at Constantinople. In May of the same year Eirene and Constantine VI made a ceremonial visit to Thessaloniki. Cormack (1981, p. 122) writes that, 'The foundation of S. Sophia would fit well into this period of optimism and expansion immediately after 783.' He dates the completion of the first phase of the mosaics to 787 which seems to suggest that construction would have been started in 784 and completed by 787. The fast 5 year timeline of Hagia Sophia, Constantinople's construction, lends credibility to 3-4 years for Thessaoniki. Then the collapse of Hagia Sophia in Thessaloniki's first dome might be attributed to both plastic mortar flow after hasty construction and earthquake damage. Arguments against the short timeline are that a much longer period of peace and re-construction had just passed. Since Empress Eirene was spending from the public purse on military campaigns and taking men from already depopulated communities to fight, and given the changes in construction methods (the barrel vaults, and the stonework) it seems more reasonable that she would have completed an unfinished project of the Isaurian dynasty and added the mosaics, than undertaken such a substantial building after having already spent manpower and money in a military campaign. In favour of a longer timeline are that the builders had to import white limestone blocks, since the earlier basilica was built with the local grey-green schist stone; only the foundations could have been built with such spoleia, and in addition these foundations are deep and broad requiring much stone,

9. Perhaps some of the population from northen Syria (Asia) who were resettled in Thrace, were among these workers.

time, and manpower. One would also expect that architects and Master masons would have learned caution and better techniques in the two hundred years since the early collpases of the daring Great Church in Constantinople. Also in favour of a longer timeline are that Empress Eirene and Constantine VI were inheritors of the Isaurian dynasty and it would have been considered virtuous that they completed the work of their dynasty in their moment of triumph. Thus an alternative possibility would be a compromise timeline, whereby the new Hagia Sophia was begun earlier but completed by Constantine VI and Eirene who even carried the same names as Constantine V and his first wife Eirene. This timeline fits the evidence of the building itself, which seems to have been constructed in several stages, and where the earthquake damage theory is not entirely consistent with the evidence.

This exploration of the strategic and cultural conditions surrounding Hagia Sophia's construction have brought us closer to the political and fiscal possibilities for her construction. Further evidence for placing her construction under the Isaurian dynasty is theological and symbolic based on the iconoclastic mosaics which can be verified as belonging to the 8th century. Their simple archetypal figures and theological inscriptions can be compared with other mosaics of the late 8th century to elicit the fundamental themes of the masons' *mystagogia*.

Theological inscriptions of the 8th century and the *eikon* of architecture

Inscriptions dating from about 800 AD in the Koimesis Churchin Nicaea, and from 740-775 AD in Hagia Eirene, and also from my case study cathedral of Hagia Sophia, suggest a coherent theological and symbolic programme during iconoclasm. Constantine V's substantial reconstruction of Hagia Eirene added a large 'iconoclastic' cross in bold outline on gold mosaic which resembles crosses that adorned Hagia Sophia, Constantinople (see Figs. 12, 13). Hagia Sophia, Thessaloniki had a similar one before the 9th century *Theotokos Platytera* mosaic was inserted. At the base of Hagia Eirene's cross, its black outline folds into several steps within an ocean-coloured greenish band. Its strokes curve into serifs whose tips are shaped like drops. Two inscriptions run aver the arch and beside. One is a quote from Amos 9:6,

> '[It is he] that builds his ascent up to the sky, and establishes his promise on the earth; the Lord Almighty is his name' (Brenton, 1844, p. 893)[10]

10. 'Ο ΟΙΚΟΔΟΜΩΝ ΕΙΣ ΤΟΝ ΟΥΡΑΝΟΝ ΤΗΝ ΑΝΑΒΑΣΙΝ ΑΥΤΟΥ, ΚΑΙ ΤΗΝ ΕΠΑΓΓΕΛΙΑΝ ΑΥΤΟΥ ΕΠΙ ΤΗΣ ΓΗΣ ΘΕΜΕΛΙΩΝ, ΚΥΡΙΟΣ ΠΑΝΤΟΚΡΑΤΩΡ ΟΝΟΜΑ ΑΥΤΩ' (Amos 9:6). For the purpose of this thesis one can translate more literally, 'The one who is building his way up to heaven/sky, and founding his message upon the earth; [...] the Lord Almighty is his name'. The inscription omits "who calls the water of the sea, and pours it out on the face of the earth" from

This is another way of saying 'the ladder of ascent and descent' that figures in Dionysios' theology and is notated by the steps leading up to the 'iconoclastic' cross. We have also considered this figure in liturgy and iconography.[11] In this inscription the Almighty is the builder, and the mason bears his cross, labouring in the process of ascent and descent, until he reaches *anenergesia* (doing without doing), and his work becomes *acheiropoeiton* (made without hands).[12] The second inscription is also from Psalms 64 (65): 4-5,

> We shall be filled with the good things [goodnesses] of thy house; thy temple [*naos*] is holy. [Thou art] wonderful in righteousness. Hearken to us, O God our saviour; the hope of all the ends of the earth, and of them [that are] on the sea afar off. (Brenton, 1844, p. 604)[13]

The same quote is found in Hagia Sophia Thessaloniki's iconoclastic mosiacs, made within decades of those at Hagia Eirene.[14] The central place of God is linked to the remote limits of the earth and the sea, through hope. It indicates the figure of the centre as origin, and the perimeter circle as creation which, as I have shown, recurs throughout the liturgy and iconography as a theological geometry. The words 'thy *naos* is holy' indicates the immanence of God at a material level and the arrival of the Holy Spirit. The 'goodnesses' indicate the virtues and *Divine Names* of God as described by Dionysios in his treatise. Through the system of analogy, the 'goodnesses' to which this refers are the reflection of the archetypes of divine names in the sensory, material world. Thus these could become a meditation on virtues as part of the masons' mystagogy, just as much as they could be applied to the daily life of the Christian.

One must conclude that Velenis' dates of the 8th - 9th century for the construction of the first two phases of Hagia Sophia make sense of the relationship between masonry architecture and theology. Support for his dates also comes from another case of matching inscriptions from the reign of Constantine V, analysed by Ousterhout (2001). According to Theophanes, the city of Nicaea had completely collapsed during the earthquake of 740, except for one church. During Constantine's reconstruction building programme, the Koimesis church was

its reference to Amos 9:6.

11. Papakosta (1950, p.32), see Chapter 4 (p. 115) of this thesis.

12. Despite the ban on icons, the 'ladder of ascent and descent' was a part of the oral tradition of which John of Damascus wrote in the 7th century (see Chapter 5 of this thesis). Its symbolic theology became fully explicit in the hierarchy within icons, after the end of iconoclasm.

13. 'ΠΛΗΣΘΗΣΟΜΕΘΑ ΕΝ ΤΟΙΣ ΑΓΑΘΟΙΣ ΤΟΥ ΟΙΚΟΥ ΣΟΥ, ΑΓΙΟΣ Ο ΝΑΟΣ ΣΟΥ, ΘΑΥΜΑΣΤΟΣ ΕΝ ΔΙΚΑΙΟΣΥΝΗ ΕΠΑΚΟΥΣΟΝ ΗΜΩΝ Ο ΘΕΟΣ Ο ΣΩΤΗΡ ΗΜΩΝ, Η ΕΛΠΙΣ ΠΑΝΤΩΝ ΤΩΝ ΠΕΡΑΤΩΝ ΤΗΣ ΓΗΣ, ΚΑΙ ΤΩΝ ΕΝ ΘΑΛΑΣΣΗ ΜΑΚΡΑΝ', Psalms 64:4-5, which I prefer to translate more literally as, *'We shall be filled with the goodnesses of your house, your holy church [naos], listen to us O God our saviour who is marvellous in justice, the hope of all in the far limits of the earth, and in the far reaching sea.'* It would be possible to understand 'goodnesses' in an abstact way, as the virtues and divine names embodied in the *naos*, rather than the 'good things' which implies material goods.

14. See Cormack (

decorated and possibly re-built. In Kluge's photographs of 1912, taken before the church was razed to the ground in 1922, Ousterhout discerns the faint outline of an original iconoclastic cross in the mosaic ground behind the figure of the Theotokos, like an erased line. A similar erased line exists in Hagia Sophia, Thessaloniki where the black mosaic squares of the cross were not completely picked out before inserting the figurative mosaic of the Theotokos.[15] The iconoclastic inscriptions remained in both churches. In the Koimesis church,

> ... on either side of the vault, two archangels stood, holding long staffs from which hung banners inscribed ΑΓΙΟΣ, ΑΓΙΟΣ, ΑΓΙΟΣ ('holy, holy, holy', the Trisagion); legends identified the figures as representing the four angelic orders: ΚΥΡΙΟΤΙΤΕΣ (for Κυριότητες, Dominions), ΕΞΟΥΣΙΕ (for Ἐξουσίαι, Virtues), ΑΡΧΕ (for Ἀρχαί, Principalities) and ΔΥΝΑΜΙΣ (for Δυνάμιες, Powers). (Ousterhout 2001, p. 22)[16]

These orders refer to Dionysios' *Heavenly Hierarchy*.[17] As I have explained in the last Chapter on Iconography, their hierarchy informed the 'Divine Ray' of the iconic imagery. Surely it was these degrees or levels that the mason was passing through as he constructed the cathedral. Since my goal in this thesis is to uncover the connections between theology and architecture, these inscriptions are significant clues. They narrow down the timing of Hagia Sophia's construction.

It makes sense to see Hagia Sophia, Thessaloniki as part of the iconoclast Emperor Constantine V's conscious building programme that continued Justinian's work of building Hagia Sophias. Theology connects the inscriptions in churches built or renovated in the 8th century. Constantine V (741-775), who made theological arguments against 'image worship', repaired Hagia Eirene in Constantinople, and likely saw Hagia Sophia in Bizye (Vize) constructed. He oversaw a large reconstruction of the Theodosian walls which trained over a thousand masons. A cathedral the size and status of Hagia Sophia, Thessaloniki could only have been funded by imperial coffers. Its red brick and white stone construction are unique for Thessaloniki but are found in the Transitional churches in Asia minor and the Theodosian walls of Constantinople. The features of its design can be found in the Transitional churches as well as other Hagia Sophias, from the 6th century cathedral in Constantinople to the 19th century one in London's Moscow Road. In the first period of peace after a century

15. See Cormack (1981, pp. Chapter 4 (Fig. 21, p. 126) and Chapter 5 (Fig. 21, p. 190) for visual reference.
16. Ousterhout also makes the case that a pair of mosaic angels had existed there before iconoclasm. These were removed and replaced by other motifs during iconoclasm, and then re-instated as new work after the end of iconoclasm.
17. *'Περὶ τῆς Οὐρανίας Ἱεραρχίας'* of Dionysios has been alternately translated as 'Celestial Hierarchy' or 'Angelic Hierarchy'. The word used is *ouranos*, which means both heavens and sky.

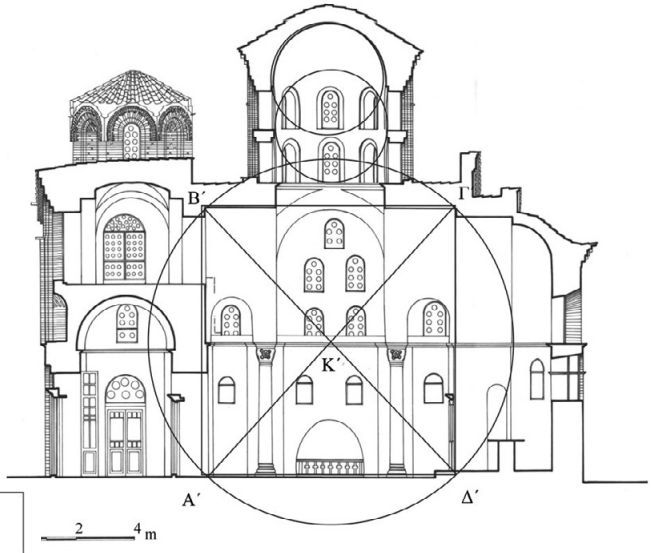
of sieges from the first Muslim caliphates, it would have been entirely logical for Constantine V to begin building an Hagia Sophia in Thessaloniki, lest Constantinople be taken, and also logical that it would be finished by his dynasty in their moment of triumph in the region. Just as Constantinople had an Hagia Sophia as its defining cathedral, the Divine Wisdom and seat of divine power should be strengthened in the second city of the Empire.

APPENDIX D: Panaghia Chalkeon

Fig. 6 Below: The church of Panaghia Chalkeon, Thessaloniki, is thought by Velenis to be modelled on Hagia Sophia, with a two-storey dome and other idiosyncratic features of Hagia Sophia.
Photo by author.



Fig. 7 Right: Section through Panaghia Chalkeon church showing circular geometry and two storey dome which Velenis suggests was modelled on a second storey wooden dome or Ciborion that may have been constructed over Hagia Sophia's existing dome.
Source: https://www.archaeology.wiki/blog/2014/05/19/the-church-of-the-panaghia-chalkeon-our-lady-of-the-coppersmiths-in-thessaloniki/ Author Dr. Ioannis Iliadis, Electrical Mechanical Engineering and Lighting Engineer credits the 9th Ephorate of Byzantine Studies of Thessaloniki for the drawings.



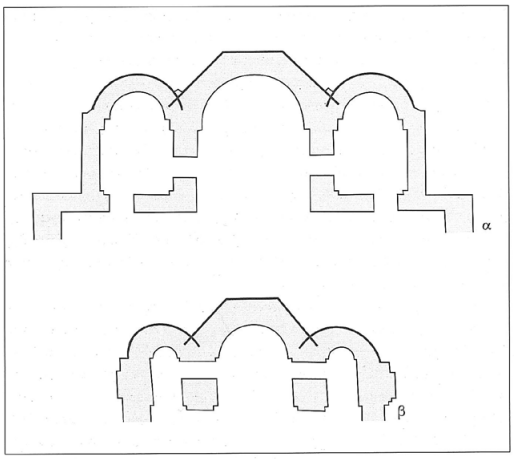


Fig. 8 Left: Comparison sketch of Hagia Sophia's tripartite sanctuary plan (above) and that of Panaghia Chalkeon church (below) This is one of the features suggesting that Panghia Chalkeon was modelled on Hagia Sophia, according to Velenis.
Source: Velenis (2003, p. 68).