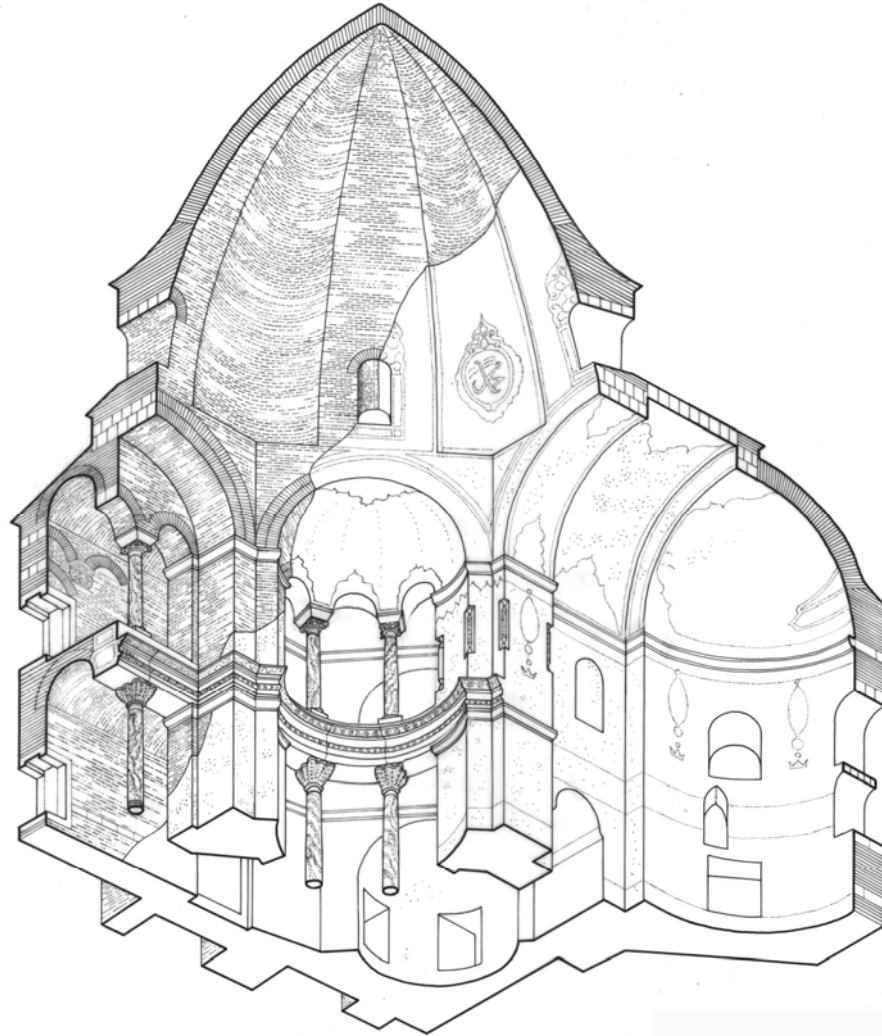
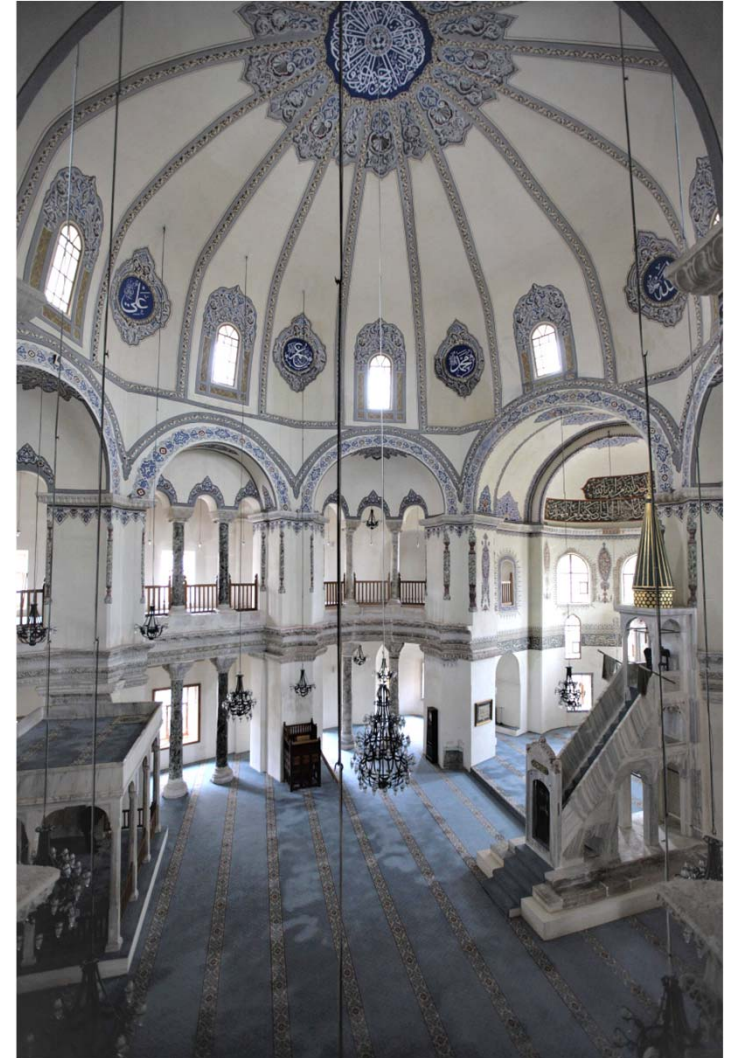


Visualising Justinian's Church of Sts. Sergius and Bacchus

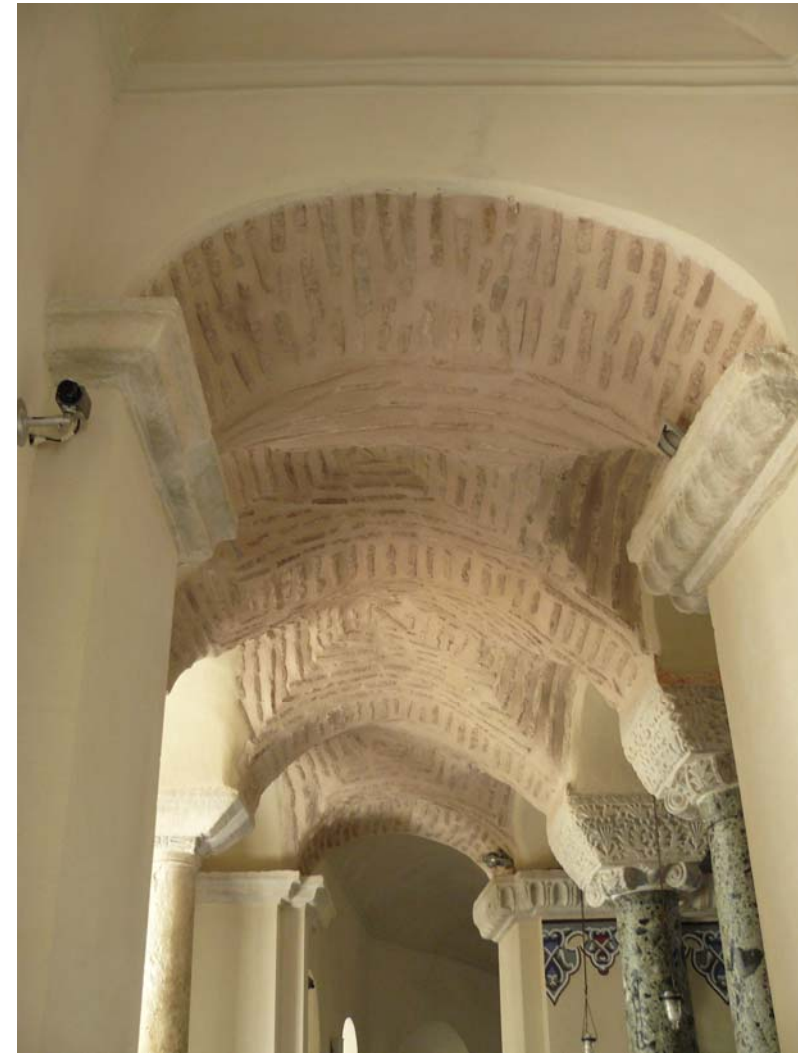


Dr. Nikolaos Karydis, Senior Lecturer University of Kent

Questioning the Originality of the Dome of Sts. Sergius and Bacchus
Traditional scholarship treats the dome as part of Justinian's original design.



Sergius and Bacchus: Extensive Evidence of Previous Alterations on the External Walls,
which include significant portions of Ottoman and Middle Byzantine Masonry

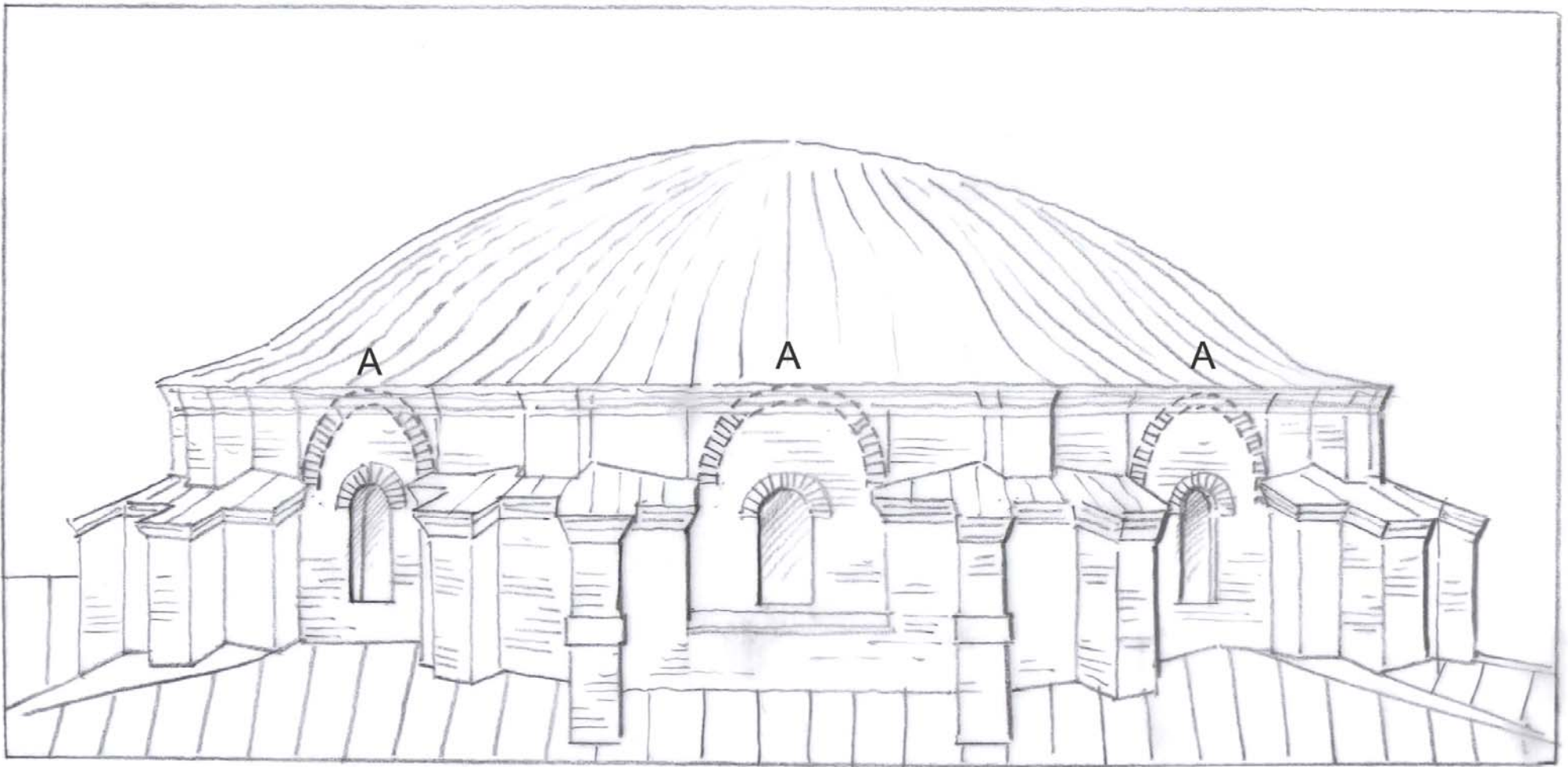


Archaeological Evidence 1. The Drum Structure

Truncated relieving arches and altered drum form suggest modification.

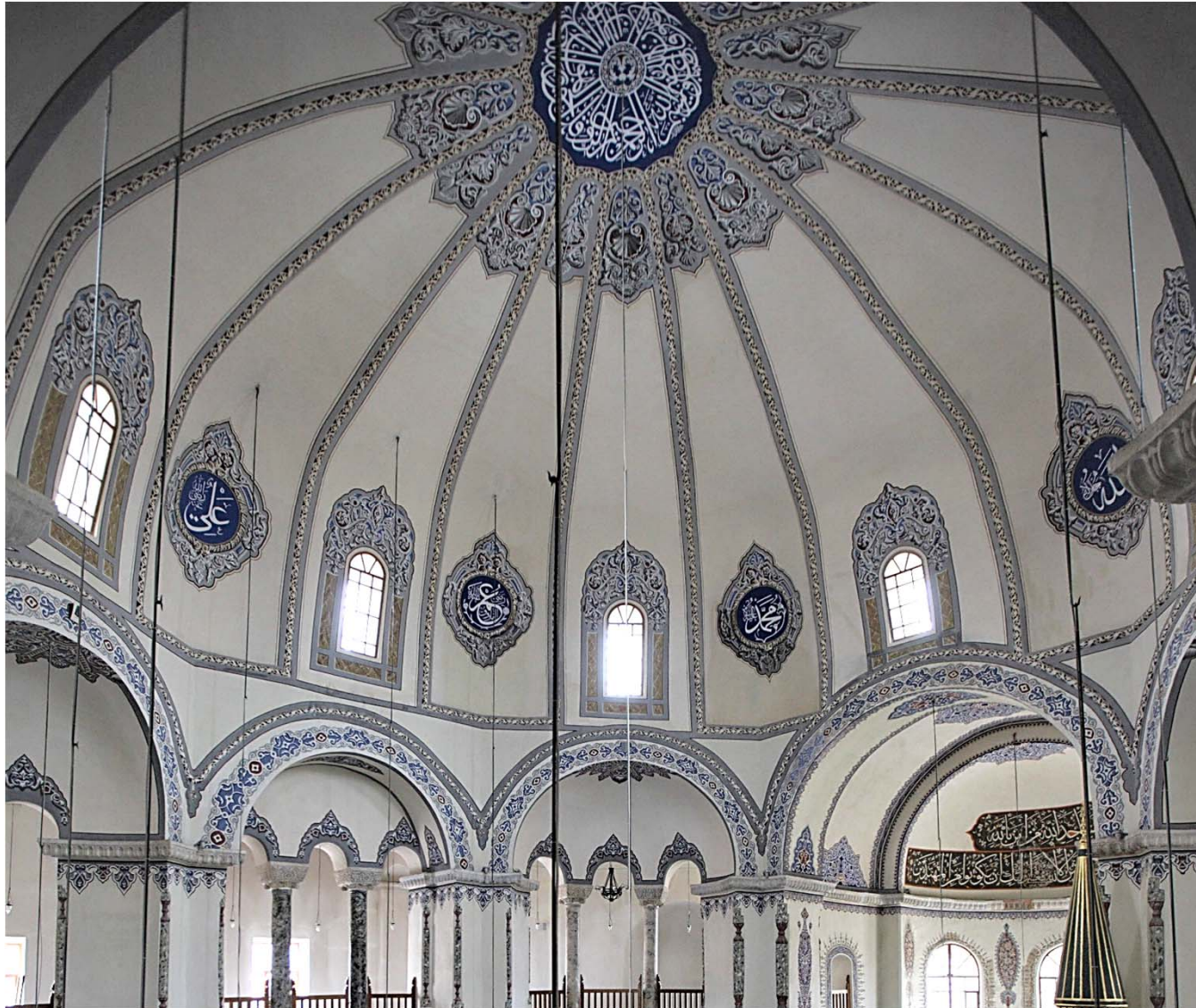
Crooked, irregular dome shape implies non-original construction.

Earthquake vulnerability likely damaged an earlier roof.



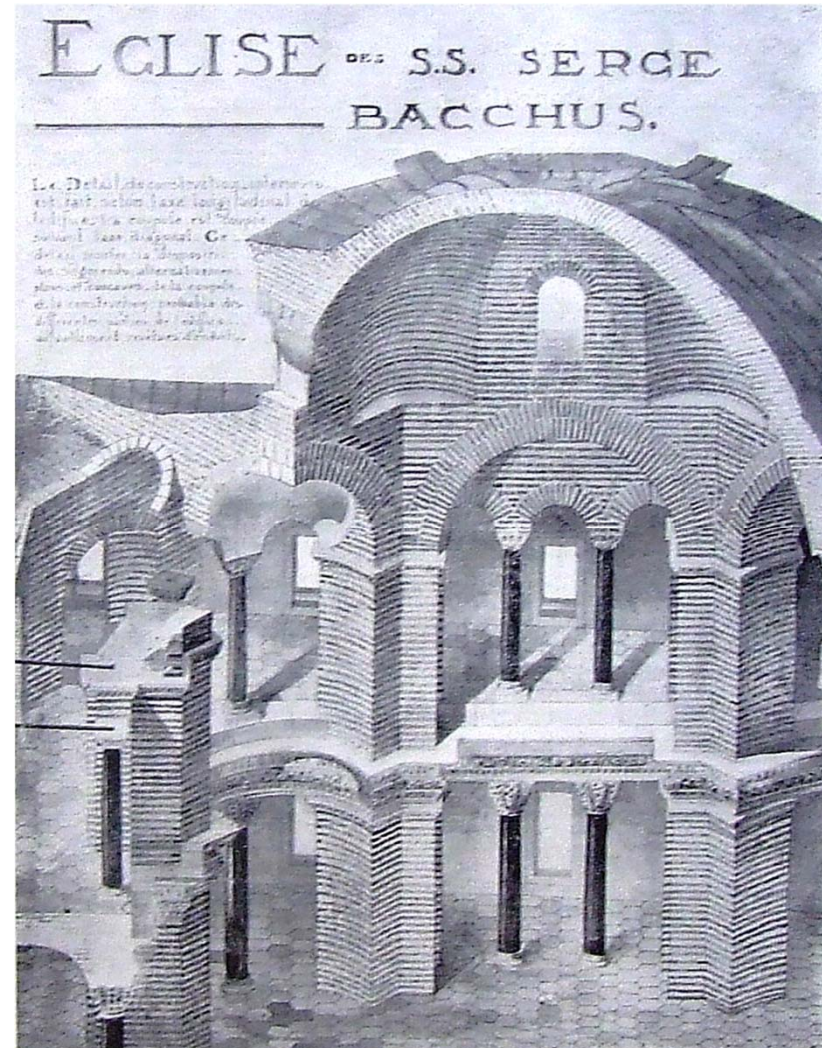
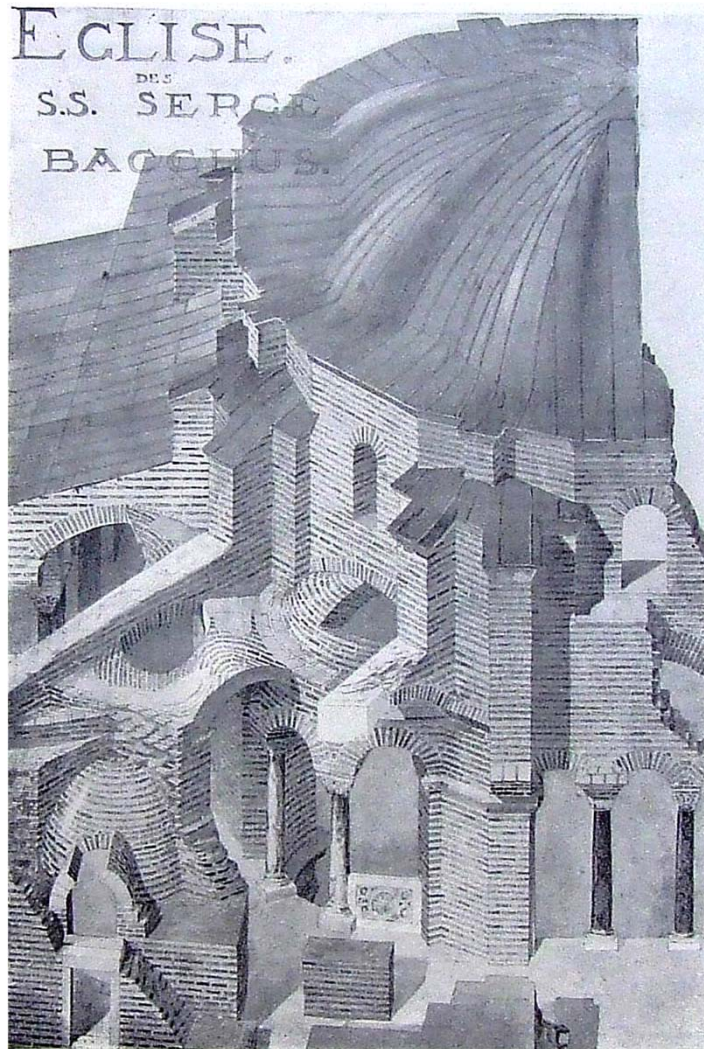
Archaeological Evidence 2. The Dome

The Dome has three distinct curvature zones - sharp curvature change aligns with interrupted exterior arches



Archaeological Evidence 3. The Springing of the Dome

Unusual Dome-to-Octagon Transition: Dome avoids pendentives: its concave compartments sit back from the inner octagon walls. 'Shelf-like', abrupt transition more consistent with later alteration.

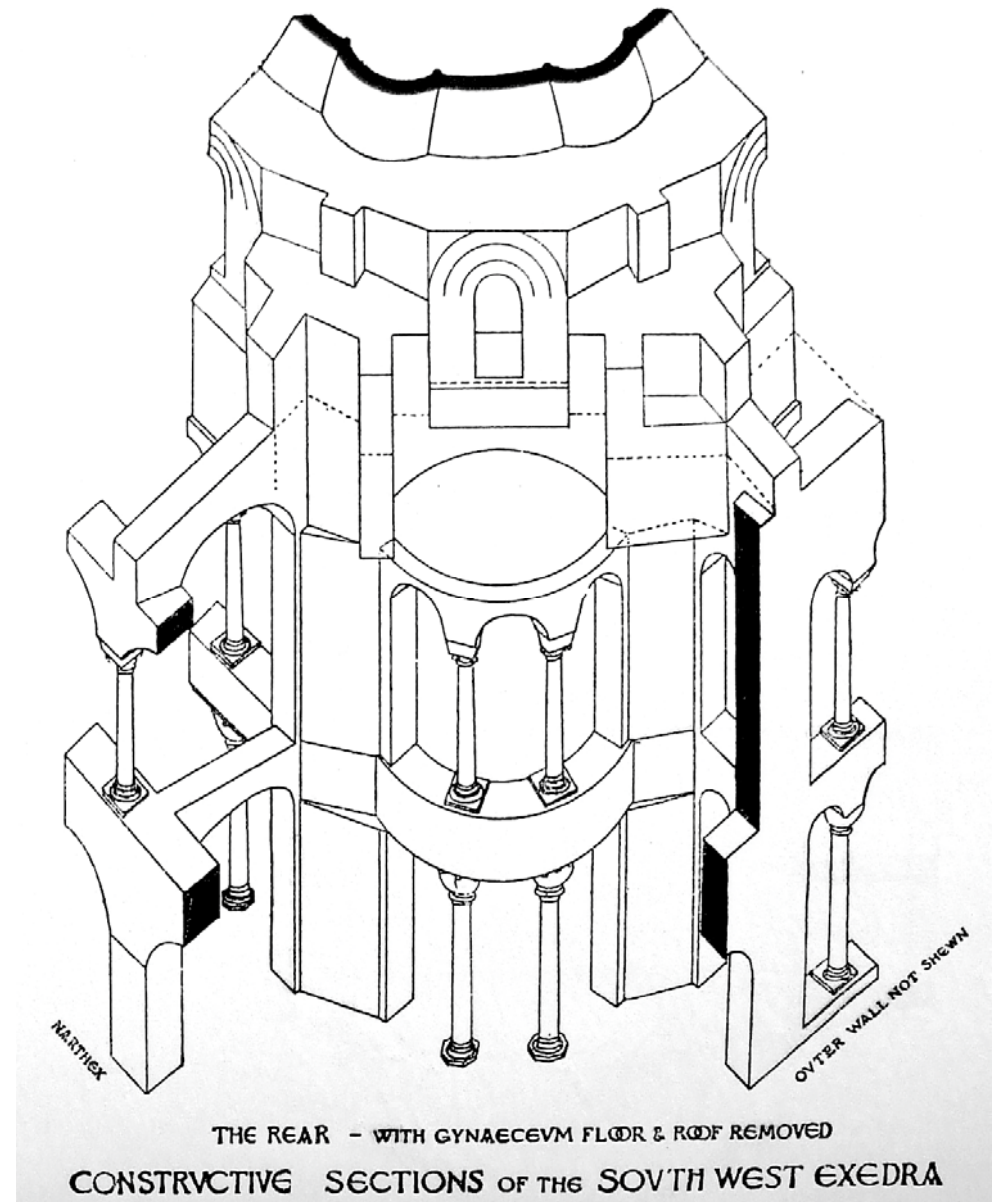


Archaeological Evidence 4. External Buttresses

Buttresses positioned behind concave dome compartments

Buttresses composed of two wall projections: one rests properly on gallery arches; the other loads gallery vaults

Atypical and Problematic Load distribution



Reassessing Jonathan Bardill's Reconstruction

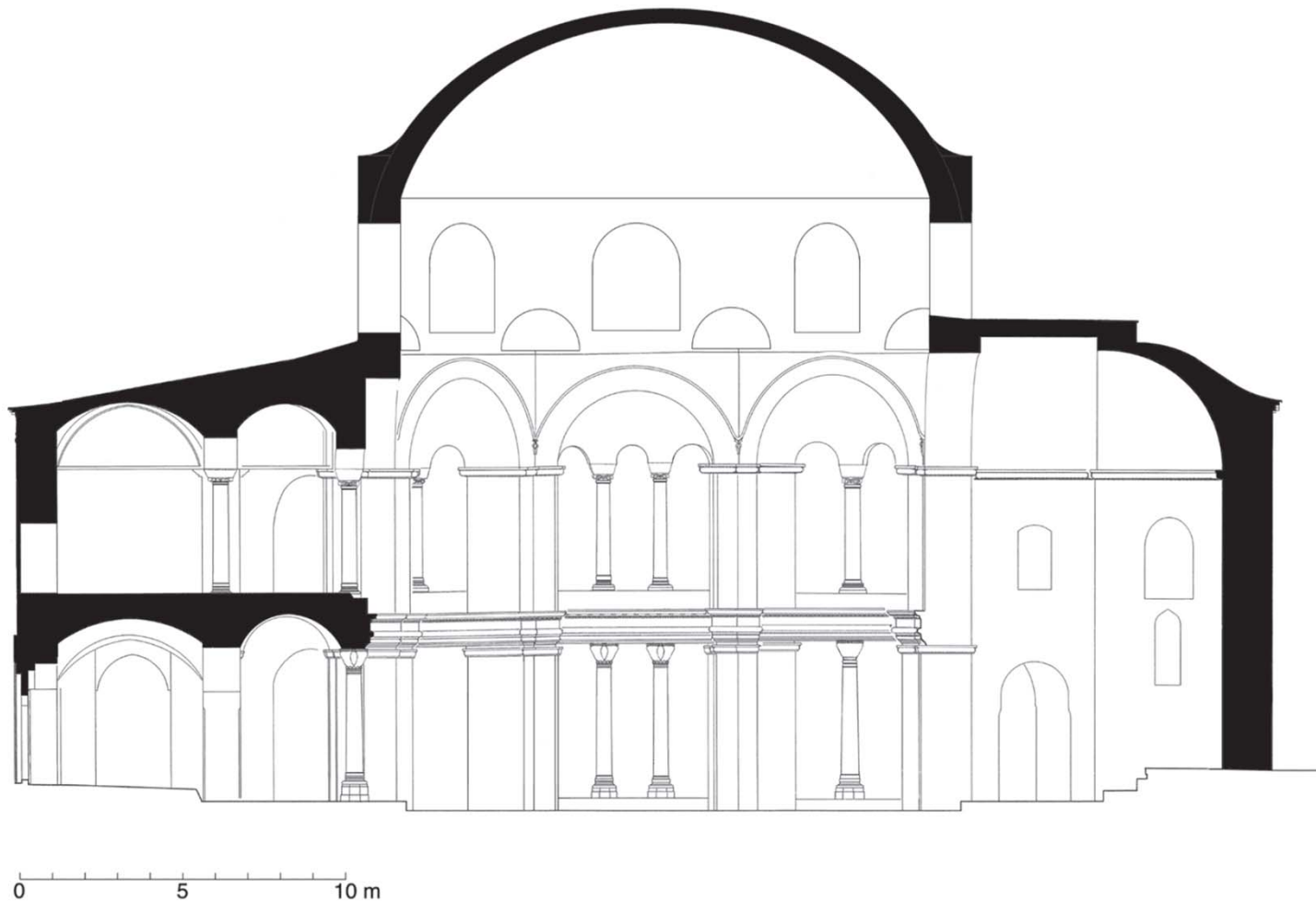


Figure from: **Jonathan Bardill (copyright holder)**, 'The Date, Dedication, and Design of Sts. Sergius and Bacchus in Constantinople' *Journal of Late Antiquity* 10/1: 2017.

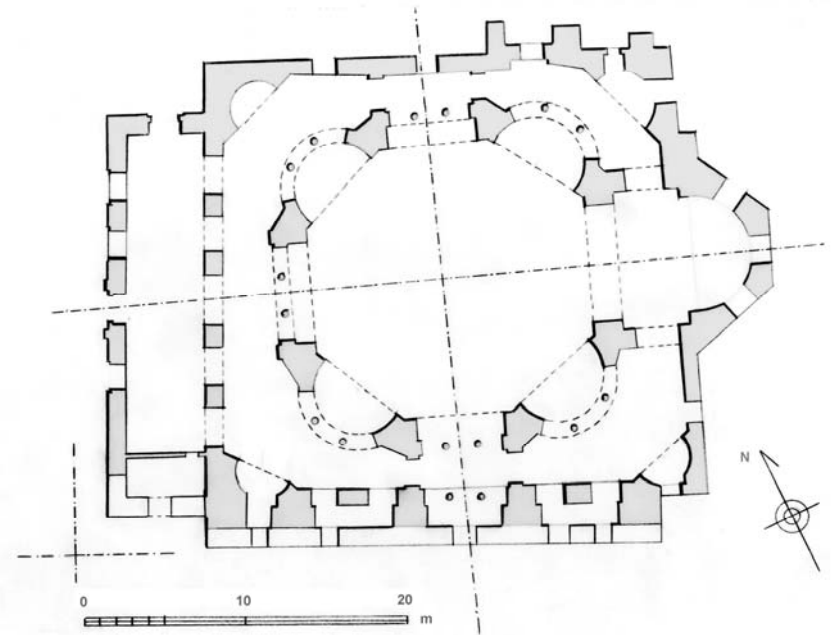
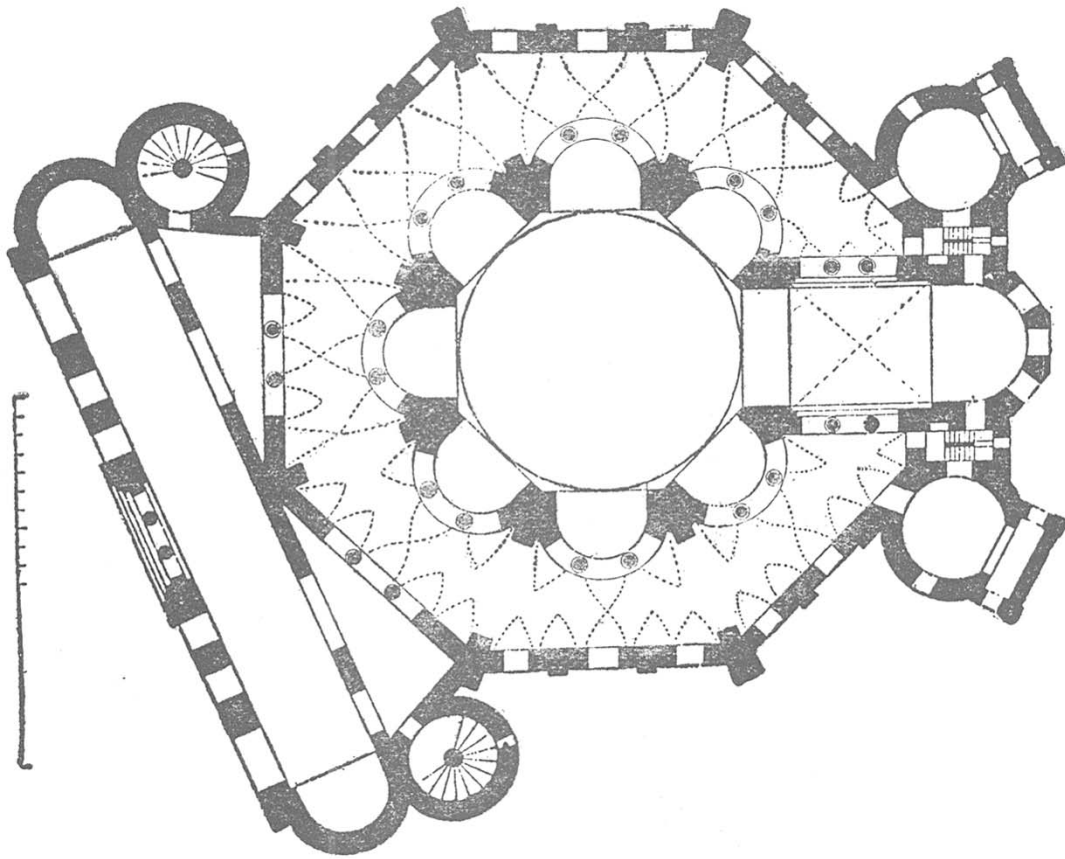
Bardill proposes an original shallow dome on a tall drum. This is based on San Vitale and the evidence of taller drum.

Problems with the 'Shallow' Dome Reconstruction

San Vitale's piers three times thicker than those at Sts. Sergius & Bacchus.

Thinner Constantinopolitan structure unable to resist lateral thrusts.

Shallow dome on thin drum structurally implausible for this site.



Load-Bearing Ratios and Implications

The dome-to-pier ratio at Sts. Sergius and Bacchus is 1/8, unusually thin. Comparable buildings have far thicker supports.
This indicates the original roof was lighter than a masonry dome.

Monument	Approx. thickness of supporting piers or walls in meters (A)	Approx. Dome Diameter in meters (B)	Approx. Ratio A/B (larger ratios are typical of stronger structures)
Santa Costanza, Rome	1.65	11.5	1/7
Mausoleum of Diocletian, Split	2.85	13.3	1/4.7
Baptistery, St. John the Theologian at Ephesus	2.6	8.5	1/3.2
Baptistery, St. Mary at Ephesus	2.5	9	1/3.6
San Vitale, Ravenna	2.5	16.7	1/6.7
Sts. Sergius and Bacchus	2	16	1/8

Re-reading Procopius *Buildings* I. iv. 1-7

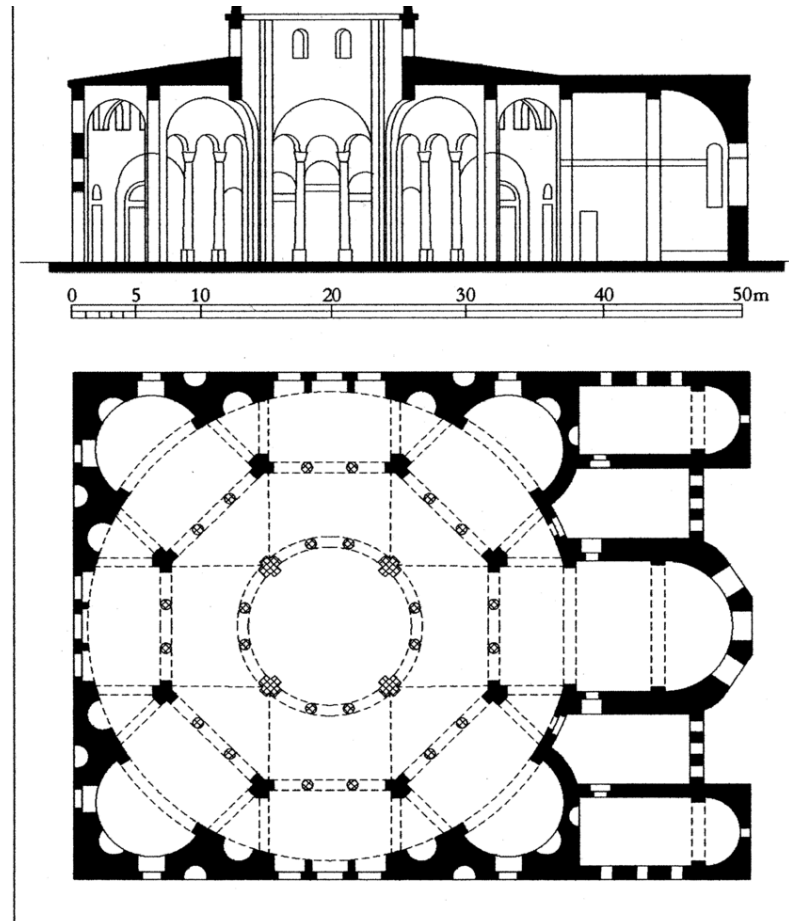
Procopius never mentions a dome for this church. He states it differs from Sts. Peter and Paul only in column arrangement. This suggests the original roof was conventional, likely timber.

There too he built another shrine to the famous Saints Sergius and Bacchus, and then also another shrine which stood at an angle to this one. These two churches do not face each other, but stand at an angle to one another, being at the same time joined to each other and rivalling each other; and they share the same entrances (esodoi) and are like each other in all respects, even to the open spaces (kraspeda) by which they are surrounded; and each of them is found to be neither superior nor inferior to the other either in beauty or in size or in any other respect. Indeed each equally outshines the sun by the gleam of its stones, and each is equally adorned throughout with an abundance of gold and teems with offerings. In just one respect, however, they do differ. For the long axis (mēkos) of one of them is built straight, while in the other church the columns stand for the most part in a semi-circle (hēmikykos). But whereas they possess a single colonnaded stoa, called a narthex because of its great length, for each one of their porches (prothyra), they have their propylaea (propylaia) entirely in common.

Proposal: the Original Structure

Original roof likely a pyramidal timber structure on a tall drum.

Large windows and thin piers suit a lightweight roof.



Bosra Cathedral, Plan and Section