Reframing dementia: Artistic investigation into the process of co-creating traditional and digital sculpture

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Abstract

Sculpture generally brings out in its form not just the self-expression of the artist but also the transformative qualities through which it influences our senses and communicates meanings to others. The physical experience of sculpture is as significant as its process of making, irrespective of the fact that the artwork may be recognised as an art object or just as an experience. As an artist-researcher, I explored the imaginative thinking and creative potential of people with dementia by engaging them in viewing, handling and making sculptures using both traditional and digital methods. In the shared space of a group setting, sculpture became their source of communication, reflection and stimulation despite the cognitive, visual and perceptual difficulties commonly experienced in this condition. My involvement in co-creating sculptures with the participants gave them direction to release self-initiated ideas while simultaneously motivating me to visualise my creations with a new emotional and empathic awareness.

The interplay between academic research and the artistic co-creative activity involved in sculpture making processes formed the basis of my artistic and conceptual enquiry engaging with people with mild dementia. My sculptures no longer remained a result of a conscious goal to achieve by following a particular process of sculpture-making; they are now entirely intuitive and reflective of what I felt in the company of my participants with dementia. Shared moments and conversational exchanges became a metaphor for my creations using a combination of traditional and digital methods.

This research presents the spatial and perceptual enquiry of sculptures displayed in two public exhibitions which had different approaches. Depending on the receptivity of the viewers the exhibitions helped to gain a better understanding of perception of dementia and their reactions to the sculptures created by people with dementia and by me. Viewers' personal involvement with people with dementia and their previous knowledge of dementia showed significant influence on their preference for the forms, materials and process used regardless of the use of traditional or digital methods. Their experiences oscillated between empathic attitude towards the participants' growing incapability and appreciation of their creative strength, which they found to be unique, meaningful and expressive.

I HAVE SEEN

I have seen their pride and also the love they hide.

I have seen them holding the clay as if a child is at play.

I have seen the glitch and their vigour at high pitch.

I have seen their love for the bloom ignoring the gloom.

I have seen them shaking but never seen them breaking.

I have seen their fingers move and their eyes gleam when they see the digital screen.

I have seen the exhilarating moments and their intrinsic temperaments.

I have seen their past and can feel their present.

(In honour of my participants)

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List of Acronyms and Abbreviations

AATA - American Art Therapy Association

ABS - Acrylonitrile-butadiene-styrene

AD – Alzheimer's disease

APP - Application

AR – Augmented Reality

ARTEMIS - ART Encounters: Museum Intervention Study

DBS - Disclosure and Barring Service

EDA- School of Engineering and Digital Arts

ePAD - Engaging Platform for Art Development

FDM - Fused Deposition Modelling

fMRI - Functional Magnetic Resonance Imaging

HCI – Human-Computer Interaction

KMPT - Kent and Medway NHS and Social Care Partnership Trust

MoMA – Museum of Modern Art

MIM - Memories in the Making

NDK – Native Development Kit

RADIQL - Reminiscence Arts and Dementia – Impact on Quality of Life

RFID - Radio-frequency identification

SDK - Software Development Kit

USB - Universal Serial Bus

Chapter 1: Introduction

Visual art has gained recognition as a strong medium of communication having immense potential for creative and therapeutic purposes (Dalley 2009; Malchiodi 2011). Art has always expressed some meaning in its forms which associates with emotion, knowledge or sensation. It conveys ideas and concepts eliciting aesthetic response and imagination. Sometimes art helps in building thoughts to make an emotional, social, economic, or political statement. When the purpose is to give new meaning, stimulation, and motivation to an individual, it may offer a challenge leading to experimentation.

The expressive quality in art facilitates its appreciation by anyone irrespective of having any knowledge of art or not. Perception of art is individualistic, and hence its appreciation is subjective. The creation of art involves the process of conception, production and presentation of an idea which is multifaceted and is constantly changing with adaptation of new techniques in its making. The artist takes on this as a challenge by creating a condition that leads to specific forms of artistic expression and its receptivity. The aesthetic value and the receptive quality of a work of art affects the perception and imagination of the viewers.

The artistic production of two-dimensional art works such as painting and drawing and three-dimensional sculptural forms is quite different and also the way these are perceived. The realisation of tactual and kinaesthetic sensations of the three-dimensional sculptural forms which has cognitive and emotive qualities embedded in its form is the main difference. Observing and touching a sculpture evokes specific emotions and subsequently affects its perceptual qualities. The artistic process of creation, production and presentation of a sculpture similarly has an effect on an individual's perception of art.

Those who have neurodegenerative conditions such as dementia can also perceive visual art, no matter how they appreciated art before they had dementia (Vartanian, Bristol and Kaufman 2013). There is a possibility that they may experience sculpture in a different way due to their visual and perceptual difficulties. The tactility and materiality of a sculpture have the capacity to have an impact on their perception and act as stimulant while engaged in looking, handling sculpture as well as creating it. They may also experience the physical sculptural forms and those mediated through digital technology differently to those without the condition.

Focusing on sculpture-making processes, this research highlights different ways of engaging people with dementia and the impact of the interactions on the art practice of the artist involved. Therefore, the purpose of the research was to suggest a possible methodology based on principles of co-creativity of processing traditional and digital

sculptures and critically examine viewers' perception of dementia and its relation with sculpture.

1.1 Aims and research questions

This research aims to present a comprehensive analysis and critical discourse on the creative potential of people with dementia and an artist's enquiry of co-creativity exploring imaginative thinking of both in group settings. Thus, the study mainly focused on engagements with sculpture supported by a professional artist and subsequent new approaches to co-creative practice. The study highlights the sculptural outcomes realised through actual practice using traditional and digital processes, as a way of disseminating the advantages and disadvantages of such an approach of creative working methodology to inform other art practitioners. The main intention of this research is to present the artistic expressions of people with dementia in sculptural forms using traditional and digital methods, the co-creative contribution of the artist involved through intuitive and reflective responses and the on-going dialogue between the artist and viewers of sculptures created for an exhibition. The artist enquiry intends to reveal on the one hand the perception of sculpture and sculpture-making by people with dementia, and the perception of viewers of sculptural exhibits by highlighting the creative side of dementia on the other hand.

The study aims to answer the following research questions:

- How do people with dementia experience sculpture and its making?
- In what ways does the process of co-creating sculpture with people with dementia influence the artistic practice of the professional artist involved?
- What effect do works created by people with dementia have on viewers? In what ways can sculptures based on the theme of dementia affect viewers' perception of dementia?

In order to answer these questions, the study was carried out in four stages. The first stage was to study the perception of physical and digital sculptures by people with dementia to understand their experience of viewing and handling sculptures. In the next stage, the emphasis was on creating an effective working methodology of producing sculptures using various methods with the support of the researcher as an artist. The third stage involved exhibiting sculptures created by the participants and artist in a public space. The last stage was analysing viewers' perceptions of the displayed sculptures and the evocative and meaningful statements they made.

1.2 Contribution

There is an increasing number of research studies in arts and art therapy which seek to understand the role and value of art for people living with dementia (Camic, Tischler

and Pearman 2014; Sauer, et al. 2016). Some of the findings are confirmed by neuroscientists who have evidence of enhanced cognitive processes, improved communication and memory arousal (Miller and Hou 2004; Viskontas and Miller 2013). Hence, this research focused on the relation of art and people with dementia and their co-creative interactions with the artist opened a debate on the outcomes.

The key contribution of this research study is to identify the factors that determine the perception of sculpture by people with dementia and viewers. In a way, the artist-researcher bridges the gap between viewers' perspectives of dementia and the imaginative and creative thinking of people with dementia. The main contributions of this research are therefore as follows:

- Gaining a deeper understanding of sculpture for creative purposes involving people with dementia.
- Increasing awareness of the imaginative thinking and self-initiated ideas of people with early stage dementia by using the process of sculpture making.
- Offering a working methodology for artist-initiated sessions by examining new approaches exemplified in sculpture and its production in the physical and virtual realms.
- Indicating the main influences that led to the major creative enquiries by the artist while working with people with dementia.
- Establishing a generic framework to aid the understanding of co-creativity from the perspective of an art practitioner.
- Evaluating any underlying issues which may be relevant for exhibition purposes.
- Promoting visibility and reflectivity of this research for others, especially sculptors for further investigation.
- Presenting a critical review of the findings from interviews of visitors in an exhibition giving prominence not just to the condition of dementia but to the person.

The research led to the following outcomes:

- Poster presentation titled "Sculpture: Exploring creative potential of people with Dementia" at the symposium *Interacting with Dementia* held at Jarman Building, University of Kent, Canterbury, May 2015.
- Paper titled – "Perception of digital and physical sculpture by people with dementia: an investigation into creative potential" presented at the *"Tenth International Conference on the Arts in Society"* at Imperial College in London, July 2015. Paper published in *The International Journal of New Media, Technology and the Arts*.
- Paper titled – "Sense and sensation of sculpture: A study of creative expressions of people with dementia in group settings" presented at the *International Dementia Conference* organised by Dementia Services Development Centre, University of Stirling held at Birmingham, November 2015.

- Exhibition *Sculptural Revelations* held at the Front Room Gallery at Beaney House of Art and Knowledge in Canterbury, July 2016.
- Poster presentation and exhibition of sculptures at KMPT Research and Development's Dementia Research Day at St. Martin's hospital in Canterbury, October 2016.
- Exhibition of sculptures for Kent Dementia Action Alliance event "KDAA Creative Care Expo" held at County Hall, Maidstone, January 2017.
- Paper titled **"**Revelations through sculpture: Exploring creative ideas of people with dementia through the process of co-creation" presented at the *First International Conference on Arts and Dementia Research* at the Royal Society for Public Health in London, March 2017.
- Poster and paper "Sculptural revelations: connecting with creativity" presented at the *Research Showcase: U3A & University of Kent Event*, May 2017.
- Exhibition at Maidstone Community Mela, partners with Arts Council, England and Kent Equality Cohesion Council held in Maidstone, July 2017.
- Received Kent Creative Awards 2017 in the 3D Art and Objects category.
- Received Fellowship of Royal Society of Arts in 2017.
- Exhibition of sculptures at the "Art For Change" at the Canterbury Arts Conference organised by Warnborough College held in Canterbury, July 2017.
- Exhibition of sculptures *In Continuum* at the Nucleus Arts Centre in Chatham, July 2017.
- Solo exhibition *Intimate Conversations* held at Studio 3 Gallery, Jarman Building, University of Kent, July-August 2017. The same exhibition was also put up for Disability History Month held at Templeman Library, University of Kent, Nov-Dec 2017.
- Submitted paper "People with dementia interacting with sculpture: an artist's enquiry" for *CArtsCon 2017 Proceedings* awaiting publication.
- Paper – "Dementia and sculpture-making: exploring artistic responses of people with dementia" - published in *Dementia: The International Journal of Social Research and Practice*, May 2018.

1.3 Structure

The chapters in this thesis are structured in such a way as to present firstly the experience of people with dementia, secondly my own experience as an artist and a critical investigator, and lastly the experience of exhibition viewers.

The first chapter presents an introduction to the aims and objectives of the research. It also maps out possible contributions of this research to the wider audience. Chapter 2 presents the literature review which includes the subjects related to art and dementia

from the perspective of creativity, art, art therapy and neuroscience. With this interdisciplinary approach, books, published conference proceedings and articles, online resources, documentation of art exhibitions, etc. were reviewed. The key issues related to the meaning of artistic engagements of people with dementia and the limitations of their involvement under conditions beyond control are explored here. A brief introduction to dementia is given first followed by advantages and disadvantages of various art interventions and an outline of some important projects, identifying the relevance and value of art. A section in this chapter describes significant works of famous artists who continued to engage in art after their diagnosis of dementia. Every effort has been made to trace the copyright holders and obtain permission of the artists' works included. A separate section defines sculpture and some of the materials used to engage people with dementia. Similarly, the different ways of using digital technology to accommodate the needs of people with dementia is discussed. Lastly, claims of the impact of creativity on the condition of dementia are confirmed by neuroscientific studies.

Chapter 3 presents the preliminary study which explored how people with dementia view and handle physical sculpture and digital sculptures on Android tablet. The method adopted for the study is explained which included seven participants having mild dementia. Findings from the qualitative data analysis are discussed which contributed to plan the main study. Also, the findings of a comparative study on the perception of three artists who have dementia amongst the seven participants and three artists without dementia are explained.

Chapter 4 describes the sessions for the main study on viewing and making of sculpture using different traditional and digital methods. First, the aims of the study are explained and then the methods developed to engage the seven selected participants with mild dementia. Traditional methods of use of clay and papier-mâché, use of 3Doodler pen and use of digital technology required careful planning in order to obtain the greatest response from the participants. The co-creative methodology adopted for the study is described briefly. Demographic details of all the participants who filled in the questionnaires are provided along with analysis of the quantitative data based on the participants' choice of options in the questionnaire. The findings from data collection of video, audio recordings and interviews are also discussed.

Chapter 5 describes my art practice while interacting with different groups of people with dementia for the research study. This chapter explains the process of conception, visualisation and final production of the sculptures which were made ready for exhibition purposes. With an introduction to the background, the inspiration behind the creations is explained focussing on the journey starting with clay and moving on to 3D printed sculpture, animation and use of sensors. This chapter also gives an account of

the transition in the artistic approach to conceive ideas, no longer purely representational. The abstract sculptures created using materials such as steel, wood and fiberglass, are explained in detail as also production of animation of virtual models of sculptures and development of Augmented Reality experiences.

In Chapter 6, the sculptural outcomes of the main study and my own works displayed in public exhibitions for viewers are discussed. The planning of the first exhibition *Sculptural Revelation,* is described and after that the data analysis of interviews of the participants who created the sculptures and of the questionnaires completed by viewers. The thematic analysis classifies responses of viewers into different categories along with the statements of the participants. The second exhibition *Intimate Conversations* was my solo exhibition. This chapter also contains details of how the gallery space was prepared for different methods of display - display of steel, fibreglass and wood sculptures, display of virtual sculptures in virtual space on computer screen, Augmented Reality experience on the tablet and sculptural installation with video projection on it. Description of viewers' demographics and quantitative analysis of their reactions to the exhibits are provided, followed by qualitative analysis of viewers' responses. The coded themes were further elaborated along with statements of the viewers.

Chapter 7 discusses the methods of investigation for this research. It also describes the framework of a "practice-based" research and co-creative methodology illustrating the relationship of participants, artist and viewers. Chapter 8 concludes with a follow up of this research study, some suggested ideas are included for future works and to make artist-led activities more visible for further investigation.

Chapter 2: Literature Review

This chapter reviews background literature on the subject of people with dementia and creativity in order to provide an understanding of the important key concepts, theories, methods and issues and identify gaps in the researcher's knowledge. The literature review is inter-disciplinary and covers health care, neuroscience, art therapy, art psychotherapy, creativity and digital arts. Contemporary issues and relevant methodologies in these fields were evaluated to identify the appropriate approach for investigating the research questions. The review focused on peer reviewed journals, conference papers, health professional studies, and research by recognised organisations and institutions related to art, dementia, neuroscience and digital technology. As a result, the following themes were identified:

1. Understanding dementia
2. Importance of creativity and art
3. Three dimensional art emphasising methods and materials of sculpture making
4. Digital art and people with dementia
5. Neuroscience and creativity

The approach to the thesis is based on the researcher's enquiry as an artist rather than an art therapist who investigates relation between art and dementia. Therefore, the literature review is structured in such a way as to focus on different art based interventions and to inform the researcher's own art practice. Consequently, an emphasis on an updated knowledge of various art processes and the range of recent activities in participatory and collaborative art projects was also required.

2.1 Dementia – an introduction

The term "dementia" conveys different meanings to different people and is usually associated with loss of memory and old age (Cahill, et al. 2015). The origin of the term "dementia" dates back to the late 18th century Latin word *de-mens* which means "away from reason" and "out of one's mind" (Gustafson 1996; Schulz 2006). Dementia is often misinterpreted as a disease but is, in fact, a condition that manifests itself in a steady decline in cognitive abilities of thinking, knowing, and remembering, affecting the memory of the person as the condition progresses (Alzheimer's Society 2014). Around seventy different diseases can cause this neurodegenerative condition.

There are different types of dementia which relate to the specific affected part of the brain with the most commonly known form being the Alzheimer's disease; 62 percent of cases suffer from this form of dementia (National Institute on Aging 2014; Alzheimer's Association 2014). Vascular dementia is another common condition and 17 percent of people develops this. Dementia with Lewy bodies accounts for 4 percent of

cases and frontotemporal dementia affects only 2 percent. The remaining 15 percent comes under mixed dementia and rarer causes of dementia such as corticobasal degeneration, primary progressive aphasia, Parkinson's disease dementia, etc.

Nowadays, dementia is considered the most challenging health condition in the world (Prince 2014) partly due to the lack of awareness and understanding, which stigmatizes this condition. As a result, it can remain unidentified or difficult to diagnose, thus delaying proper care (Bamford, Holley-Moore and Watson 2014). Dementia typically affects older people, 65 years and over. However, early onset of dementia has been found in younger people as well.

According to World Alzheimer Report 2015, about 9.9 million new cases of dementia are diagnosed every year worldwide, which means a new case emerges every 3.2 seconds. The estimated number of people living with dementia in 2015 was 46.8 million, this is likely to increase to 75.6 million in 2030 and 131.5 million in 2050 (Alzheimer's Disease International 2017). The diagram below shows that the fastest growth is envisaged in the Asian region, which includes China and India.

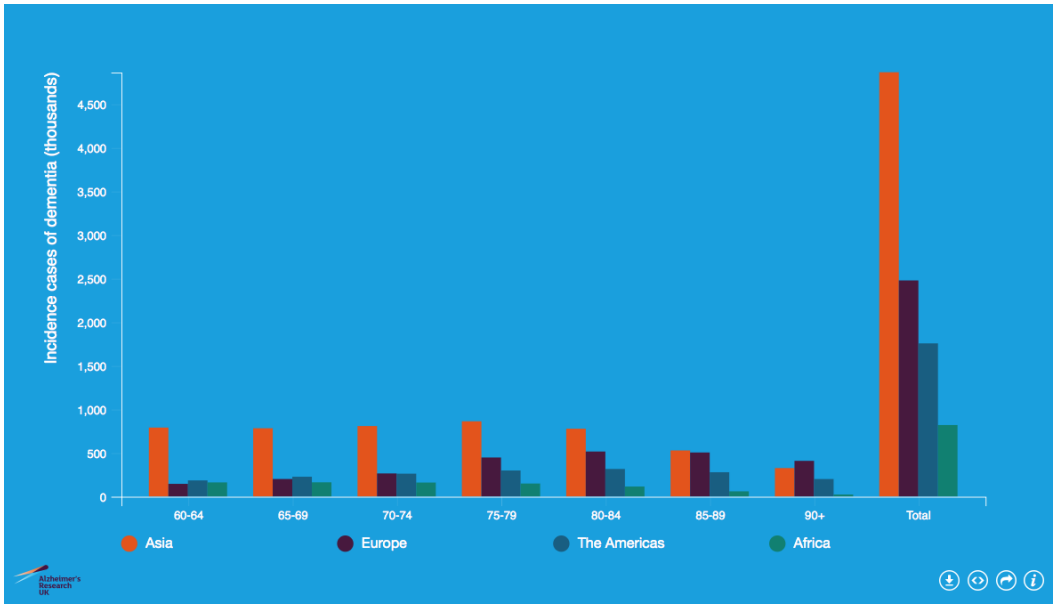


Figure 1: Distribution of number of people with dementia by major world regions/age group. Source: Prince, M et al 2015; World Alzheimer Report 2015

Cognitive impairment: visual and perceptual difficulties

The condition of dementia causes an overall loss of the cognitive abilities of thinking, knowing and remembering, affecting the memory of the person. It mainly affects three parts of the brain: the areas for language, memory and decision-making (Alzheimer's Association 2014). There are easily recognizable symptoms, including memory loss, poor judgement, confusion, anxiety, depression, inadequate verbal communication, changes in personality and mood, and difficulty doing everyday chores (NHS 2013). All

these symptoms are taken into account in assessing the condition by medical diagnostic procedures. As the condition progresses, a person with dementia might experience impairments in verbal communication, attention, sense of reasoning, visuo-spatial function, recognising objects or organisational skills. Experiencing such difficulties sometimes leads to depression, irritability, aggression, anxiety, personality changes and apathy.

Besides normal age-related problems with sight, the visual and spatial abilities of people with dementia may become affected, and as a result they can misinterpret the surroundings. In many cases, it has been found that they have visuo-perceptual difficulties, problems involving their vision and perception (Huppert, Brayne and O'Connor 1994). These difficulties in identifying objects and people lead to visual mistakes such as illusions, hallucinations, misrecognition, and misperception (Cooper and Greene 2005; Alzheimer's Society 2012). This condition also affects naming and remembering what has been seen. Even colour perception is affected, especially colour recognition and ability to contrast colours (DementiaToday 2011).

Due to these visuo-perceptual difficulties people with dementia have to cope with changes to their lifestyle which are often frustrating and, to a certain extent, frightening. Helpful interventions are usually required to overcome some of these difficulties (Alzheimer's Society 2012). Attention to regular eye check-ups and visual health care are helpful. Light plays an important part and hence good lighting is vital as this will reduce shadowed areas considerably. It has been found that careful selection of colours to suit individual needs also helps. Colours with high contrast are preferred, although contrast should be kept to a minimum in areas that do not require emphasising. Complicated and bold designs, patterns on the walls and floors and shiny objects, such as mirrors, should be completely avoided (Watkinson 2014). All these tips will help to create a dementia-friendly environment.

2.2 Efficacy of creative activities and art interventions

Meaningful engagement that helps to bring about positive changes by improving quality of life is important for people with dementia. Several studies show that creative activities such as art, dance, music, drama, and poetry can have positive impact (Killick 2013). Following are some of the reported benefits:

- Positive emotional responses
- Reduction in agitation
- Greater social engagement/interaction
- Change in cognitive processes
- Increased verbal fluency
- Weight gain

• Increased mobility
• Greater physical strength and balance
• Improved mood and attention span
• Less stress (caregivers and receivers alike)
• Elevated quality of life
• Greater understanding of the human condition (Baines 2007)

Even though people with dementia experience loss of memory, their imagination persists; engagement in the process of creativity by using the imagination can greatly add to overall quality of life and positive emotional responses (Malchiodi 2011). According to John Killick, the essential quality for any creative process is to give pleasure and the experience of being involved in creatively engaging environments and working with materials to realise creative concept can give a distinct sense of pleasure and appreciation (Killick 2013). Person-centred approaches can yield positive results in helping people with dementia to express themselves and maintain their sense of selfhood.

While engaged in an activity which requires certain degree of concentration, people with dementia become less self-conscious, thus focussing and paying attention to something can help to lessen their distraction (Killick 2012). Killick argues that the sense of time usually goes unnoticed while one is absorbed in an activity and emphasised the significance of "sense of flow". The concept of flow was presented by Mihaly Czikszentmihalyi in an outstanding account of creativity in 1990 in his book *Flow: The Psychology of Optimal Experience.* He interviewed more than 100 people who have contributed to the field of creativity with his unique concept which Killick found essential for creative engagements (Killick 2013).

Mihaly Czikszentmihalyi identified the following factors for creativity:

- Setting clear goals that are achievable and are according to one's known skill and ability
- Offering limited number of choices for maximum attention
- Discouraging self-consciousness
- Offering more time
- Providing instantaneous feedback and direct response
- Maintaining balance between capability and challenge
- Feeling of self-control over the situation or any activity
- Making the activity worthwhile and satisfying
- Providing wide-ranging activity (Csikszentmihalyi 1996)

While discussing the "flow", Killick considered the necessity to place pleasure in its context. Flow is much more complex than pleasure as it includes experiences such as

thoughts, intentions, actions and senses. Csikszentmihalyi has also claimed it has the potential to strengthen the self with the possibility of self-transcendence which Killick considered would contribute directly to create moments of pleasure and enjoyment (Killick 2012). This perspective can be applied in situations contributing to personal development also. People with dementia usually live through the loss of selfhood, which could be replaced by a sense of self-enhancement while experiencing the flow; art is an area where creative activities can fulfil all the criteria for flow.

From time to time it has been debated whether being creative is the same as being artistic. A question arises here: does creativity exist in everyone? The best way forward is to accept the fact that we all have an innate sense of creativity. "Everyone is creative… Creative expression is a basic human need and maintains our sense of well-being" (Baines 2007). What is required is to channel this creative sense in such a way that it leads to an artistic expression. People with dementia may or may not realize and in some cases they might not even be able to accept that they are creative or artistic, their intellectual capacity might challenge this notion. But based on the belief that creativity exists in all of us, there is a need to understand the extent to which a creative work can give shape and meaning to their feelings. How far the pleasure of imagining and the sense of realization of the surrounding world can be addressed through creativity and art is of utmost significance.

Art as therapy

The practice of contemporary art therapy is relatively new, however, its origin goes back in time when art was used to treat mental illnesses, to communicate experiences and to tell stories (Vick 2011). Much experimentation has happened since Margaret Naumburg in USA and Edith Kramer in Austria distinguished art as a therapy and as a distinct profession. Margaret Naumburg known as "the mother of art therapy" published a monograph *Free Art Expression of Behavior Problem Children* in 1947 and Edith Kramer published her first book *Art Therapy in a Children's Community* in 1958 (Rubin 1999). But it was Adrian Hill, a British artist, who coined the term "art therapy" in 1942 and in 1945 published his book *Art Versus Illness*. Hanna Kwiatkowska, a Polish psychologist and sculptor who started her career as an art therapist in 1955, contributed immensely by introducing art therapy as a profession to the mental health community. The first journal on art therapy was published by Elinor Ulman in 1961 in USA; it was later renamed *American Journal of Art Therapy* (John 2006). Art therapists of today are qualified in both art and therapy, with a deeper understanding of psychological aspects of creative approaches.

According to the American Art Therapy Association (AATA), "art therapy is the therapeutic use of art making, within a professional relationship, by people who

experience illness, trauma or challenges in living, and by people who seek personal development" (American Art Therapy Association 2014). Art therapy serves diverse purposes by facilitating individuals or situations. It is used for healing, improving wellbeing, psychotherapy and to express the inner self for better understanding of others (Malchiodi 2011). As it serves so many purposes, art therapy is sometimes called expressive therapy, art psychology or creative therapy. The emergence of visual creativity for people with dementia for therapeutic purposes and its acceptance offers a window into the artistic process and its expressive qualities.

Art therapy provides an option for self-expression and can be easily personalised according to the needs and viable requirements of individuals with dementia and the stage of their conditions. "Art therapy as a treatment for people with dementia can improve the quality of life through the benefits that come from using the visual arts to communicate inner experience and connect with others" (Ehresman 2014). Along with ongoing studies to prevent or reverse the progression of dementia by medical treatment, research is being conducted to introduce interventions to delay the deterioration of mental abilities through art and thereby to improve general wellbeing. Although this research is not following the art therapy route, the knowledge of its contribution to artistic engagements with people with dementia are however important.

Understanding the impact of visual art

Over the past decade, there has been an increasing general interest to promote health and wellbeing through exposure to arts highlighting the physical, mental, social and emotional benefits (Fancourt 2017; Stickley and Clift 2017). Art offers so many different ways to be creative and imaginative which may not be coming from any conscious reflection but which may surface with artistic engagement. Expressing and communicating through visual art forms is as challenging as other creative arts such as performing arts. Art in general is a form of self-expression, but visual art is aesthetically appealing and unique (Kontos 2012). It is boundless, and any restriction often challenges the norms of its practice. These qualities of art affect its viewing and making, both of which are equally important. Hence, art enables a wide range of possibilities for people with dementia to explore and experiment.

According to Claire Craig, Co-Director, Lab4Living at Sheffield Hallam University in the UK, "Visual art is a statement, an expression of something about how we feel and who we are, conveyed through colour, line or form. If art is seen as an unfolding story rather than simply as an end product, as a conversation or reflection rather than an exercise in producing an accurate depiction of a scene you can quickly see how the canvas becomes a meeting place where relationships can develop and self-esteem and identity can flourish" (Craig 2012).

Interestingly, it has been found that people who do not have artistic skills can still learn and practise art. Sometimes this could even be taken to a higher level of mastering the latent skills. Dr Bruce Miller, a behavioural neurologist, argues that, "my patients developed a new interest in art and in some cases began producing amazing art" (Miller 2013). Furthermore, he noticed that some individuals with exceptional talent, artistic or otherwise, who had frontotemporal-lobe dementia, showed remarkable skills in creating something that they never did before (Baines 2007). Their condition of semantic dementia, which is a subtype frontotemporal-lobe dementia, showed the parietal lobe less affected which is the dominant hemisphere for creativity.

Dr Daniel Potts, a noted neurologist from Alabama, USA, gave a detailed account of his father, Lester Potts, affected by Alzheimer's (DementiaToday 2012). In 2002, his father attended an art activity workshop and started doing watercolour paintings though he had never painted anything before in his life. He noticed the cognitive quality became a little better and this had a marvellous and beneficial effect on his personality and depression. Memories, which he could no longer verbalize or recapitulate, came out in his watercolours (Potts 2006). His father's memories of working at a sawmill reflected in the paintings with trees, saws for woodcutting and circles of wood grain. Painting of two men using a saw to cut a tree brought a forgotten memory of a friend and another painting with silhouettes of small houses linked with his past hobby of building birdhouses.

Besides recalling old memories art offers more options of engaging. Craig's writing on *Conversation in Paint* in 2012 dealt with different approaches to represent visual art by people with dementia. Some of those with whom she worked wanted to pursue their existing art hobby, to improve their skills or simply to create something pleasing. For others, it was an outlet for emotions like resentment, frustration or dejection.

The social potential of engaging people with dementia through art is significant in tackling the isolation that they generally experience. Therefore, the possibility of communication and social interaction is considerable (Potts and Potts 2011). The material used in giving shape to their creative expressions becomes a source of non-verbal communication. Both verbal and non-verbal communication become meaningful, especially when people with dementia no longer have confidence in living an independent life due to social isolation.

The relationship between meaningful engagement with art and health outcomes has given the impetus to many projects and artistic activities which have been designed and developed especially focusing on people diagnosed with dementia. Creative artists and staff members of Belfast Health and Social Care Trust supported housing centres - Sydenham Court and Mullan Mews in the UK - undertook a project to explore arts in a

health care setting for people with dementia (Grant, Elliott and Morison 2011). The project lasted six weeks and involved painting workshops led by artist Helen Shields along with sessions on music, dance and drama. Participants selected one autumn leaf from a bag full of leaves for drawing or tracing around it. This was a half hour activity and the artist kept the participants engaged by discussing plant life. Then a large silk sheet with an outline drawing of sunflower was placed in front of them and they were asked to fill in the colours with brushes and later write on the leaves names of five pleasures of their choice. Observing some physical discomfort on working on one long table, the artist in the next session provided small tables for every participant. The participants painted the outlined cardboard leaves, which were later laminated to create a "garden mobile".

This study is of great value as the measurement criteria was based on video data of the activities which enabled the artists and researchers to gain new insights into the participants' working practice. The video recording of the sessions showed "the importance of delivering a creative product for people with dementia in terms of personal achievement" (Grant, Elliott and Morison 2011). It was noticed that some of the participants accepted the challenges, overcoming their inhibition, and it was considered a rewarding experiment. Four key themes and a number of sub-themes were identified: lifelong learning, relationships, memory and wellbeing. The photographs and film provided evidence of the positive impact of the art activities on the participants, which could easily be used to recall these moments as well as enabling the participants to hear their own voices.

In another study, a semi-quantitative method was used to compare the visual art of 49 people including those with Alzheimer's, frontotemporal dementia and semantic dementia as also healthy older adults (Rankin, et al. 2007). Neuropsychological testing of visuospatial, perceptual, and creative functioning was performed and each participant produced four drawings. The result showed that the group of people with dementia displayed "distinct patterns of artistic feature" compared to the healthy adults. The drawings of the participants who had frontotemporal and semantic dementia were rated as "more bizarre" with more facial distortions compared with healthy adults. Besides occasional facial distortion, those with Alzheimer had more control than other dementia participants, used more subdued and dull colours and showed less detail in their drawings.

In the US, an art-based program for individuals with dementia called "Memories in the Making" (MIM) was run by Alzheimer's Association of Greater Cincinnati (Alzheimer's Association 2014). Sessions on different visual art forms aim to provide social interaction and increase self-confidence through communication. Artists work with participants through the creative process of reminiscing and painting. Research led

by Jennifer M. Kinney and Clarissa A. Rentz observed twelve people in the early and middle stages of dementia who engaged in the sessions of self-expression through art. The purpose of the research was to address two specific research questions:

- To what extent do participants experience a sense of well-being as evidenced by the domains of interest, sustained attention, sense of pleasure, negative affect, sadness, enhanced self-esteem, and normalcy while they participate in Memories in the Making?
- Do individuals experience the same degree of well-being during Memories in the Making as they do while participating in other structured activities (e.g., current events/hobbies)? (Kinney and Rentz 2005)

Domain of well-being	**Operational definition**
Interest	Participant makes eye contact, eyes following object or person; attempts to socialize by extending hand, pat on shoulder; turning body toward or moving body toward person; chats with others (does not have to have sustained conversation or even intelligible conversation); smiles; offers and receives support from others during session.
Sustained attention	Participant is able to attend to project or activity for 10 minutes; once started on the activity, participant requires rare prompts to complete simple steps to complete the task at hand, or to return to the activity; if verbal prompts or cues required, participant returns to activity and works or pays attention until distracted; participant may engage in conversation with facilitator during the activity but returns to activity when chatting is finished.
Pleasure	Verbal expression of pleasure while participating in the actual activity; eyes crinkled, smiles, laughter, relaxed facial expression; nods positively, relaxed body language.
Negative effect	Closed body language, frown on face, angry verbal outbursts; facial grimacing, or brows furrowed; psychomotor agitation (hand tapping, moving in chair, leg jiggling, wincing); rapid breathing, eyes wide, frightened look.
Sadness	Flat effect or weeping quietly; verbalization of feeling sad over situation; eyes drooping; sighing, head in hand, eyes/head turned downward and face expressionless.
Self-esteem	Verbal expression of pride and satisfaction; nonverbal expression of pride, pleasure and satisfaction of having completed an activity (clapping, smiling, tearfulness, nodding head); expressing an internal sense of pride verbally through reminiscence in response to piece of art created by the individual (for example, client draws a picture of an apple orchard, which recalls memories of role as a farmer that he shares with the group).
Normalcy	Verbal expression of experiencing a sense of normalcy, which arises from belonging to a group and deriving enjoyment from participation in a group activity

Figure 2: Operational definitions for the 7 domains of well-being (Kinney and Rentz 2005)

Figure 2 above shows the seven domains of wellbeing which were taken into account while analysing the collected data. However, it is interesting to note a higher level of interest, sustained attention, pleasure, self-esteem, and normalcy in the sessions in comparison to traditionally structured art activities in other settings. There was hardly

any difference in the negative effect of the two domains showed below. Although there was "relatively little negative affect and sadness observed during either activity, there was a trend for participants to report less sadness during Memories in the Making" (Kinney and Rentz 2005).

In the US, one of the successful projects is the MoMA (Museum of Modern Art) Alzheimer project *Meet me at MoMA*, funded by MetLife Foundation, took place between 2007 and 2014. The aim was to make art and art related programs accessible to people with dementia and their caregivers and offered viewing of art in their collection (Rosenberg 2009). The project was based on the evaluation of the varieties of programs which emerged from The MoMA Alzheimer's Project initiative and their implementations. It also evaluated the relationships between the museums and the community involved and any changes in overall perception. (Adams and Cotter 2011)

The first phase of this study involved conducting four "mini" case studies with the museums, which had already developed programs with support from The MoMA Alzheimer's Project. Most of the museums teamed up with local Dementia or Alzheimer's Associations and Residential Care Homes. The evaluators used the case studies for the final survey. In all 33 different museums, a total of 66 people took part. The programmes were designed to engage the participants in looking at and conversing about art which showed higher percentage as shown in Figure 3.

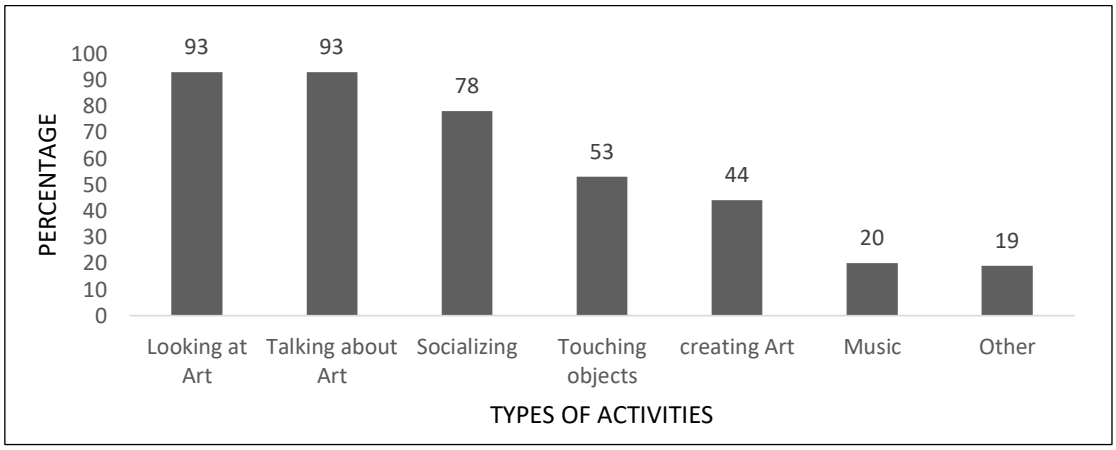


Figure 3: Types of activities undertaken by the museums (Adams and Cotter 2011)

The overall feedback of the participants' experiences was very positive and many of them appreciated these activities. The people with Alzheimer's disease or other types of dementia and their carers had a leisurely time that elevated their mood. Even their relationships showed some improvement. The need for more programmes like this was highlighted although it would require finding more funding sources. The evaluation of such programs is important for its continued success to plan suitable activities in the future.

The MoMA Alzheimer project also initiated practical training programs in other museums and organisations and for individuals who had similar interest, such as *Contemporary Journey* offered by Walker Art Center in 2011, which included gallery tours and art making sessions alternately. This programme was more flexible and involved stimulus from surroundings, and encouraged participants' interpretation of their observations (Parsa, Humble and Gerber 2010).

Psychosocial Research and Support Program of the New York University Center of Excellence for Brain Aging and Dementia and MOMA conducted an evidence-based research study which ran for nine months (Mittelman and Epstein 2009). In this study, art acted as a stimulus for 37 persons with dementia and 37 caregivers who took part. Eighty percent of participants had a positive experience; with the educator explaining each artwork and with other staff involved. Participants' social interactions and shared experiences increased their interest in the art displayed.

Another project *Artful Moments* was carried out collaboratively by Art Gallery of Hamilton and the Behavioural Health Program at Hamilton Health Sciences (Hazzan, et al. 2016). Inspired by *Meet Me at MoMA*, this project involved eight participants with middle to late stages of dementia engaging in art appreciation and art-making activities. Twenty-seven sessions were held between August 2013 and June 2014 and each session had one hour for art appreciation and one hour for making art. The results of the study showed that the combination of art activities facilitated positive engagement of the participants with the support of the caregivers. The engagements offered a new approach to creative enjoyment for caregivers, which could be experienced and shared mutually. The artistic exchanges encouraged individual expressions, sharing of opinions and strengthening of social connections in the group.

There have been other initiatives which involved art talks and tours, gallery and museum visits aiming at improving social and psychological wellbeing. *Discover your story*, a guided museum tour programme was developed by Department of Museum Guide Program of Minneapolis Institute of Arts in collaboration with Alzheimer's Association Minnesota, North Dakota in 2008. A research study conducted in 2010 indicated participants' increase in knowledge, engagement and stimulation contributing to the success of these tours (McGuire and Gaugler 2010).

A project was developed by a partnership between the Auckland Museum, Alzheimer's Auckland, the local organization for the New Zealand Alzheimer's Association, and the University of Auckland in 2014. The findings of this project helped develop future programmes with maximum levels of engagement. ARTEMIS (ART Encounters: Museum Intervention Study), is a research project conducted at Frankfurt Städel Museum to study the impact of art on emotions and behaviour and also on the general

well-being of people with dementia. It involves guided tours to museums and art-related workshops for the participants and carers (Schall, Tesky and Pantel 2015).

The National Gallery of Australia started *Art and Alzheimer's* program in 2007, renamed as *Art and Dementia* in 2015. The five aims of this project included encouragement in building community art-services, raising awareness and reducing stigma and improving health and wellbeing. The MacPherson et al conducted a pilot study *You do it for the moment* in National Gallery of Australia with seven people with dementia living at home and eight in residential care with the help of six educators. Results showed increased levels of engagement, sense of achievement, memory stimulation and overall positive outcome (MacPherson, et al. 2009). In the UK, "House of Memories" is a museum-based project developed by National Museums Liverpool in 2012 and its impact on people with dementia and carers are evaluated annually by the team of "Crossing Boundaries" research program. Similar to this, the Royal Academy of Arts has an ongoing program called *InMind*, which includes viewing art from their permanent art collection followed by discussions. Their activities offer handling of objects with the aim of sensory stimulation.

Camic et al emphasised in their paper about the impact of art gallery interventions on the participants in their study and they stated "the art gallery is seen as being a physically valued place that provides intellectual stimulation and offers opportunities for social inclusion" (Camic, Baker and Tischler 2016). Twelve people with mild to moderate level of impairment along with twelve carers and four facilitators participated in this study. It was held in two different sites, Dulwich Picture Gallery and Nottingham Contemporary in the UK, over a period of eight weeks with two hours for each session. The sessions started with art viewing followed by art making. Results indicated cognitive stimulation at individual level and scope of social engagement and interaction with positive implications. Qualitative analysis identified three main themes – social impact, cognitive capacities and art gallery settings. The study confirmed the participants' acceptance of new skills and knowledge, enhanced levels of cognitive engagements in both activities along with reminiscence and memory enhancement (Camic, Tischler and Pearman 2014). In another study, thirteen participants with mild and moderate dementia were involved in art-related activities including viewing of artworks. This was also held in the UK over a period of eight weeks and looked at cognitive stimulation interventions in art galleries. Results showed positive impact on cognitive ability with more verbal fluency and reminiscence (Young, et al. 2015).

In another paper, Camic et al examined the impact on general wellbeing of handling of museum artefacts. A seven-month long study included twelve groups comprising four to eight participants with mild to moderate range of dementia and two or three Alzheimer's Society's staff members. Two different venues were chosen, one was

Alzheimer's Society Day Care Centre and the other a museum. The maximum duration of each session was sixty minutes, which accommodated handling of five to six objects by all the participants. The findings of this study confirmed that object handling by people with different stages of dementia acted as visual and tactile stimulants. Statistical results indicated remarkable and significant change in the participant's general wellbeing after the activities (Camic, Hulbert and Kimmel 2017).

2.3 Artists with dementia and its effect on their art

Art has always been an expression of personal experiences of artists, which reflect personal emotional reactions of their life or unconventional ways of responding to issues related to their life. Despite declining health issues, artists who engaged in creative processes have sometimes shown remarkable expressive qualities in their art. Henri Matisse, the famous French artist, is one such example. Cancer surgery in 1941 had a devastating effect on his health; in the last years of his life he experienced difficulties painting in his usual way. This opened an additional chapter in his career as he turned to another art form creating spectacular paper cut-outs. In 2014, Tate Modern, London, displayed an exhibition of 130 colourful cut-out works which looked simple but were considered as extraordinary and exceptional by critics.

Artists who had some form of physical disability or illness have tried to overcome their condition. In the same way, artists, who had cognitive impairment at some stage in their lives, remained engaged and have shown remarkable artistic expression. Pia Kontos, a scientist, has confirmed this association of art and artists, "Creativity is a form of self-expression that persists despite even severe dementia because it is an embodied dimension of human existence – underscoring the notion of bodily memory in distinction to cognitive memory" (Kontos 2012). The extent to which this condition affects artistic abilities is explored further in this research with new insights.

People with dementia without any formal art training, have the possibility to engage in the creative process of making art. Rita Hayworth (1918 - 1987), an American film actress, took up painting as a hobby after she was diagnosed with Alzheimer's in 1981. According to her daughter, she painted mostly flowers and it made her relax allowing her to focus on something (Khan 1987). This is an example of how making art engages parts of the brain that are not yet affected by the condition and helps restore the sense of personality, identity and dignity. In case of artists such as William Utermohlen, Carolus Horn, Danae Chambers, Hilda Gorenstein, and Willem de Kooning who were diagnosed with Alzheimer's and other kinds of dementia, they continued to paint after their diagnosis.

An abstract expressionist, Willem De Kooning (1904-1997), whose works show fusion of Cubism, Surrealism and Expressionism is considered a very prominent figure in Modern Art. His black and white abstractions from late 1940's and paintings of women in early 1950's represent the peak in his career (Hess 2004). In the late 1950's and early 1960's he painted mostly landscapes. Mid 1960's again showed the return of figure drawings of women in his works. Early in the 1970's he made three-dimensional representation of the human figures he had painted before. His next phase from 1975 onwards and before he had dementia, was mostly landscape and seascape paintings (Sylvester 1994). His paintings present changes in his artistic style, which revealed the artist's gradual descent into dementia. The final phase in his creative years began in the 1980's and in the next seven years, he painted almost three hundred paintings. There was a radical change in his techniques and creative expressions. His works had fewer brush strokes and were smaller in size compared to the larger canvasses he used earlier. It was found that his paintings lacked the dense impastos on the surface like those of his 1970's abstractions, instead they had flat smooth surfaces and some of his earlier works were scraped down and rubbed to make the surface smoother. Colour palette was restricted to the three primary colours: red, yellow, blue and sometimes additional touches of complementary colours - orange, green, and violet were used (Barker and Barker 2010). From 1988 onwards, his paintings lost coherence and in 1989, he was finally diagnosed with Alzheimer's disease (Shiff 2011).

Figure 4: *Woman I* (1950-52), *Untitled XVII* (1984), oil on canvas by Willem De Kooning
Source: © 2014 The Willem de Kooning Foundation/Artists Right Society (ARS), New York

William Utermohlen (1933-2007), an American artist who lived in London, was a very committed and bold figurative artist at a time when Pop Art and abstraction was creating waves in the art scene. By the end of 1980's, he started retreating from the large-scale paintings he did earlier. He had no family history of any neuro-degenerative mental

condition. In 1995, at the age of 61, he was diagnosed with Alzheimer's. He painted *Blue Skies* after his diagnosis which showed him sitting on a chair clinging to a table and a coffee cup as if to hold on to what he had, beneath an open skylight of blue emptiness (Alzheimer's Association 2008). This depicted a crucial point in his life, which was the beginning of his descent into dementia.

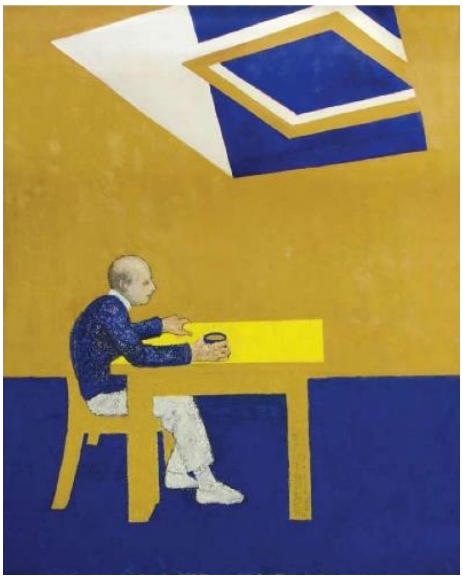


Figure 5: *Blue Skies,* oil on canvas (1998) by William Utermohlen
Source: Courtesy of Chris Boïcos Fine Arts, Paris

Following the diagnosis, his paintings, especially self-portraits that he painted over a period of seven years, documented the decline of his condition in great depth (Kontos 2004). His works provided valuable contribution to neuro-scientific study and can be used as a chronicle and visual narrative of an artist's subjective experience of dementia. Dr Sebastian Crutch, Ronald Isaacs and Professor Martin Rossor published two important papers on his works from a neurological and neuropsychological perspective (Crutch, Isaacs and Rossor 2001). They argued that the artist's visual memory may have been unaffected which contributed to his artistic abilities to continue painting. In comparison to his self-portrait in 1960, considered as a reference point of his series of portraits, his works after diagnosis became more abstract and flatter with fewer details and a complete spatial loss towards the end.

The second portrait painted at the age of 62 showed the earliest signs of difficulties in drawing facial features and spatial relationships. At the age of 63, in his third portrait the changes were more visible especially his altered sense of proportion. He gave up working with oil paints and instead chose watercolours, and lastly pencils, which were easy to use and handle. The features of the face were more distorted in his fourth portrait, which he made at the age of 64, and some smudges are noticeable as he rubbed the areas of the painting, which he did not like. His portrayal of himself in terms of a scribbled skull and minimum facial features indicated his lack of control. At the age of 65, his

self-portraits were more abstract in nature as his realistic approach was completely discarded at this stage.

Figure 6: Paintings of self-portraits of William Utermohlen. Top - left: 1996; centre: 1996; right; 1997 & bottom – left: 1998; centre: 1999; right: 2000
Source: Courtesy of Chris Boïcos Fine Arts, Paris

Carolus Horn (1921-1992) was a German artist and designer who continued painting as his Alzheimer's condition became aggravated which highly affected his style. For twelve years, K. Maurer and D. Pruvlovic from the University Clinic of Frankfurt did an extensive study of Horn's working methods before the onset of dementia and after the diagnosis which gave them "…a deeper insight into the behaviour and experience of an AD patient with the progressive increase due to the disability" (Maurer and Prvulovic 2004).

Horn painted *Rialto Bridge* in Venice, Italy many times and that is taken as a reference point to compare his painting style before and after his diagnosis. From 1978 to 1988, he painted it five times and the gradual changes in the spatial relation affected by visuo-perceptual difficulties are evident (Bogousslavsky, et al. 2010). In 1978, his paintings had the feeling of motion and effect of movement, the bridge was very detailed with proper shading. The symmetry in the geometrical shapes and smooth arches which were found in his paintings in mid-1980's started disappearing. The depth and three-dimensional effects in his works were diminishing and lacked in perspective and details. The paintings were much more simplified and he used yellow more often in his works. The change from blue-green range to the yellow-red range of colours and the loss of shading was noticeable which is typical of this condition. During the moderate stage of his condition, Horn painted rigorous cartoonish human figures and the animals had human facial features.

Figure 7: (Top from left to right) *Rialto Bridge* in 1978, mid 1980's & 1988 by Carolus Horn and (bottom) during the severe stage of Alzheimer's
Source: (Sellal and Musacchio 2008 ; Maurer and Prvulovic 2004)

By 1988, whatever Horn painted was from his memory especially from his collection of Russian icons. Within an enclosed frame, he repeated iconic symbols and shapes which gave a feeling of ornamentation to his mythically themed paintings. When he approached the late stage in his condition, he could focus on one element and drew with one colour, mostly in red. Horn completely lost the ability to draw anything realistic and also to shape squares. His drawings became very childlike towards the end having lost most of his artistic flair but his drive to create art remained and he attempted to draw using lines only (Rose 2006).

Toronto based artist, Danae Chambers (1940-2013) painted mostly landscapes and still life as well as portraits. She experienced symptoms of dementia at a fairly young age of 49, Dr Luis Fornazzari, neurological consultant at St. Michael's Hospital's Memory Clinic in Canada, studied her case. She was diagnosed with Alzheimer's at the age of 54 after she experienced increasing problems with her concentration and attention and required assessment by a neurologist. She had difficulties in verbal communication and had language insufficiency but her visual perception skills were not affected. At this stage, Dr Fornazzari confirmed the function of right hemisphere to be less affected. He said, "Ms Chambers had preserved visual attention capacity, as well as a spared capacity to recall, at short-delays (few seconds to minutes), human faces and geometric visual material. Visuospatial construction capacity, visual perception and integration of abstract and concrete designs were preserved" (Fornazzari 2005). Seven years after her diagnosis, Chambers was taken to a care home as she was having great difficulties in judgement and orientation. Dr Fornazzari monitored her and evaluated her cognitive

abilities two years before and two years after she was taken to the care home. Eight months before she was moved, she was able to paint portraits. There was decline in her cognitive functions but she showed ability to express herself through art. Throughout this period, she kept on painting and ten years after diagnosis, her paintings showed some visible changes in technique (Rose 2006). The proportion of facial features were no more in control and the paintings depicted disproportionality. There were some visible irregularities in her work; she reworked on her paintings by overlapping or painting again some parts of the image. The colour palette also changed to very sober colours. She was capable of pointing out her mistakes at the beginning but gradually she could not do it anymore. Towards the end, she was able to recognise neither her friends' paintings nor her own works.

Figure 8: Self Portrait (1999) by Danae Chambers (left) and close up (right) (Fornazzari 2005)

Mary Hecht (1931-2013) was a renowned Canadian figurative sculptor. Despite her advance condition of vascular dementia and her inability to do some day-to-day tasks, she retained her ability to draw. This was a very similar case to Danae Chambers. Dr Fornazzari conducted a study of the last few years of her life and her artistic abilities as she could draw faces and figures in details instantaneously or from memory. While she drew her sketches, she could talk about art with ease showing no hesitation (CBC News/Health 2013).

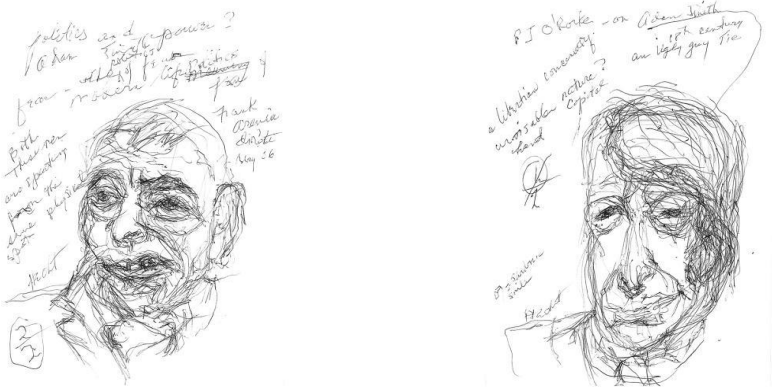


Figure 9: Drawings of portrait by Mary Hecht after diagnosis. Source: (In: Miller 2013)

It was noticed that Hecht was unable to draw the time on a clock correctly or some simple shapes or to recollect names of certain animals, researchers, nurses. Nevertheless, she could easily sketch a perfect portrait of a research student from the Memory Clinic. She also showed ability to sketch from memory; an example is a sketch of a sculpture of reclining Buddha. Another example is her drawing of the famous conductor and cellist Mstislav Rostropovich on the same day she had heard of his demise earlier on the radio. She had met him a long time ago and she sketched him effortlessly from memory (Yellin 2013; redOrbit 2013).

American oil painter and water-colourist, Hilda Gorenstein, (1905–1998) was another gifted artist whose exceptional works before and after her diagnosis of Alzheimer's give valuable information for study and research purposes. She signed her works as "Hilgos" which she adopted as a professional working name. Her famous statement "I remember better when I paint" has inspired people to think differently about dementia. An international documentary film made in 2008 and 2009 was inspired by her experience. The film was narrated by Olivia de Havilland showing how the power of creative arts can re-engage people with Alzheimer's; it contained interviews of renowned neurologists and various people who had Alzheimer's (Wellner 2014). Her daughter, Berna Heubnar, wrote a book, "I Remember Better When I Paint: Art and Alzheimer's: Opening Doors, Making Connections" about her and the connection between art and people with dementia, with the help of art students who worked with them. Hilgos Foundation, a non-profit organisation in the US, was founded in her memory to promote artistic creativity for people with Alzheimer's.

Gorenstein had produced more than one thousand five hundred paintings and sculptures over a period of seventy years. She was a marine artist and her most favourite theme was water scenes. She did commissioned work of twelve murals on large panels for the US Department of Navy. After her diagnosis, Gorenstein stopped painting and retreated into herself for years, which is very common in this condition. She started painting again when some students from the School of the Art Institute of Chicago engaged in art activities with her. The students realised Gorenstein's passion for art; she would transform into a very cheerful person when she was handed a brush to paint and she was able to communicate verbally much more (Scheidt 2016).

During Gorenstein's final years in a nursing home, she managed to create almost three hundred paintings. The confident brush strokes applied on the waves, birds and boats in her earlier works before her diagnosis gave way to simpler and abstract forms in her compositions. Though her condition was deteriorating, she still had a sharp eye for colour, a sense of composition and expression while retaining her unique style. The paintings, which had natural themes, were representational to some extent but the rest were abstract which sometimes were compositions simply with lines and circles painted

in bright colours (Whitcomb 2010). Gorenstein remembered to give titles to each work and signed them with her name *Hilgos.*

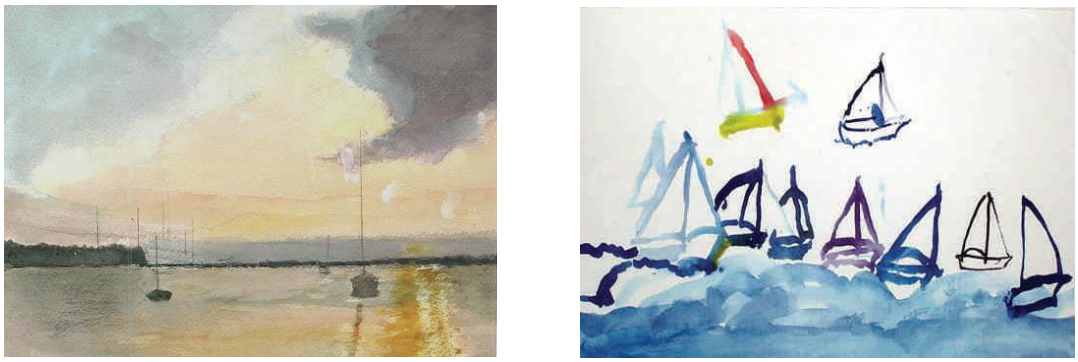


Figure 10: Paintings by Hilda Gorenstein before and after onset of dementia
Source: Courtesy of Hilgos Foundation

An interesting study by the University of Liverpool and Maynooth University published about the possibility of detecting neurodegenerative disorders in artists including dementia before their diagnosis. Digital images of 2092 paintings created by seven renowned artists' works were examined using fractal analysis (Forsythe, Williams and Reilly 2017). The seven artists were Salvador Dali and Norval Morrisseau who had Parkinson's disease, James Brooks and Willem De Kooning who had Alzheimer's disease, and Marc Chagall, Pablo Picasso and Claude Monet who did not have any neurodegenerative disorders. The results of the study showed changes in the fractal dimensions of the paintings of artists who suffered neurological deterioration in comparison to those aging normally.

The above study points out that the art-practice and the artistic outcome are both contributory factors to indicate any neurodegenerative condition such as dementia. On the one hand, there is evidence to show the lasting effect of art on artists who have dementia and, on the other hand, the condition can be identified through their practice of art.

2.4 Sculpture: Traditional and Digital

Sculpture, like any other artistic production, is a form of creative expression evoking tactual and kinaesthetic experience. It is a physical manifestation of creative ideas, and compared with craft it is a "non-functional object that exists in space, is meant to be looked at, and generally carries intrinsic meaning to the observer" (Peterson and Peterson 2002). The physical presence of sculpture conveys spatial awareness, which contributes considerably to its appreciation (Ruhrberg, et al. 2000). Therefore, the perception of sculpture is highly influenced by its physical-sensual-emotional experience (O'Toole 1994). It has the capacity to challenge and transform the knowledge of the onlooker. There is an instantaneous involvement of the senses in perceiving a

three-dimensional form, which indirectly invites us to recognize the visual representation of a sculptor's creative idea.

The plastic art of sculpture has been conventionally defined in dictionaries for centuries as "the art of making two or three dimensional representative or abstract forms, especially stone or wood or by casting metal or plaster". This definition is no more restricted to traditional concepts, methods or materials of creation and production. The solid and static forms of traditional sculptures of earlier periods have led to the creation of architectural, kinetic, and mobile sculptures (e.g., the works of Naom Gabo and Alexander Calder), sometimes with sound elements. This also led to sculptures made from readymade objects; for example, Marcel Duchamp's *Fountain*.

Earlier modelling, carving, casting, welding, and assembling were the methods used for production and presentation of freestanding and relief sculptures. Nowadays, however, the use of digital methods to create 3D-digital projections and 3D-printed sculptures has offered new meanings to three-dimensional sculptural art (Wood, Hulks and Potts 2012). As early as 1990s, sculptures created using digital technology have been referred to as "InfoSculpture", "RoboSculpture" or "TeleSculpture" (Lavigne 1998). Digitally created and produced sculpture can be one of three types: it can be manipulated digitally and then produced using traditional manual process; it can be created without the use of digital technology and then produced through digital process; or it can be created and processed entirely through digital technology (Ganis 2005). Sculptures created by artists - for instance, Robert Michael Smith, Keith Brown, Michael Rees, and William Latham - are based on such technology.

The digitizing processes involved in creating sculpture have redefined the contemporary artistic practice in terms of methods, materials, and techniques, thus opening new ways of thinking conceptually (Wands 2006; Christiane 2008). These processes are used not only for modelling and creating a sculptural form, but also for presenting and displaying it. Virtual-reality environment and augmented-reality applications have provided a wide range of possibilities of different kinds of spatial interaction; for example, the works of Char Davies and Karl Sims. Both artists and viewers have acknowledged the changes in perception from traditional sculpture to digital sculpture which depends entirely on the use of digitising processes (Chauhan 2012; Ursyn 2014).

Aspect of touch in sculpture

Artistic expression is a combination of instincts, sensations, emotions and intuitions and relates to imagination. Sculpture is a visual form of art and its tactile aspect connects to our sense of sight and sense of touch. Realisation of sculpture is a sensory experience. Gottfried Herder asserts that the only real way to appreciate a sculpture is by holding it, in order to feel the artist's craftsmanship. Sight reveals only the visible surface which is

exposed to light. Anything that has a form can be perceived better by involving the sense of touch (Herder 2002).

From the time of Aristotle, touch has been a subject of discussion in art, medicine and philosophy. Human beings, according to him, excel by far in comparison to other animals and "this is why man is the most intelligent of all animals" (Massie 2013). Touch is the sense that makes humans different from animals. Peter Dent in his book, *Sculpture and Touch*, explains the unique quality of touch citing key studies, which have investigated the cognitive and neuroscientific aspects of the processing of information associated with tactile sensations (Dent 2014). The tactile contact and the sensation it produces affects our cognition and emotion. Artist Ramone Munoz stated, "When people experience an art object tactilely, actually hold it in their hand, they understand something of what the artist was thinking when they created it" (Munoz 2003).

A small statue from the Stone Age called *Venus of Willendorf* (Figure 11) probably a female fertility figure carved out of limestone, was created to be touched, held and also to be worshipped (Witcombe 2013). This sculpture is significant in understanding the relationship with the sensation of touch. The faceless female figure with exaggerated breasts, belly and buttocks could not stand on her feet. The size of the statue is 11.1 cm which fits perfectly in the human palm. For generations examples of such works of art indicate that the sensation of touch played an important role in the artistic expression and its appreciation.

Figure 11: *Venus of Willendorf* (Photo credit: Hitchcock 2008)

In the twentieth century, touch was an important aspect of an art movement called Tattilismo meaning "Tactilism" or "act of touch", which was a multisensory evolution of Futurism (Gallace and Spence 2011). Italian poet and art theorist, Filippo Marinetti who coined this term in 1921, created "tavole tattily" (tactile tables), which had a variety

of tactile charts made out of boards and covered with different kinds of materials (Gahl 2005). These were supposed to be touched and felt with fingers to fully comprehend the sensation of touch. A work called *Sudan-Paris* was described in his *Manifesto II*. Materials, which had crude, greasy, rough and sharp textures, were used to represent Sudan. There was an area representing sea made out of silver foils. Very soft materials such as feather, silk, etc. represented the delicate and civilized Paris.

It is evident in works of modern sculptors such as Brancusi, a Romanian born sculptor, how the act of engagement, visual and tactile, affected their creations. His abstract work *Sculpture for the Blind* created in 1920 is suggestive of the sensation of touch besides viewing it which enhances the experience of sculpture by blind people. (Brenson 2004). In some ways, he raised the issue of blindness. Made out of marble, this sculpture had the smoothness and soft sensation of the surface that he specialized in. Swiss sculptor Giacometti created *Disagreeable Object* in 1931 which was a product of his being influenced by Surrealism. This work was intended to evoke tactile sensation by touching and also the possibility to display it in various positions. The form made of wood had a very smooth surface and the tip of the sculpture was pointed and had spikes to give a feeling of desire and intimidation (Marcoci 2005). Contemporary artists such as Ernesto Neto, Lilli Muller, Rosalyn Driscoll, and Miho Suganami have created works mainly for the pivotal purpose of the sense of touch (Gallace and Spence 2014).

The sensation that arises by touching artworks is closely associated with bodily sensations. Sometimes very deep, primitive, emotional and sensual ideas are conveyed through art. It has also been realised that any two persons exploring the same artwork will not have the same experience as each of them will be handling different parts and experiencing different sensations. An artwork therefore is unique in its creation not only in its tactile experience but also in the way it is received. Researches in cognitive neuroscience highlight that touching different kinds of materials of artworks triggers certain areas of the brain involved with the perception of pleasure (Staricoff 2004). The cognitive and spatial processing of sensory information evoked by touch often relates to memories and experiences associated with the tactile sensation.

Material qualities of sculpture

As far as materials are concerned, sculpture provides more scope for therapy and creative pleasure than other artistic mediums. Some of the potential materials widely used are clay, metal, stone, wood, etc. Engaging in a physical activity of handling sculpture provides exercise to eyes and hands. Their coordination stimulates neurological pathways from the brain to the hands. The psychological and physiological benefits contribute to overall well-being.

Sholt and Gavron carried out an extensive review of 35 clinical reports on working with clay for art therapy and psychotherapy undertaken for clinical experience. The fundamental features of the process of using clay for creative purposes, i.e. handling, manipulating and sculpting clay, were discussed. Three aspects of working with clay were highlighted: "procedural expressions through the experience of touch, movement and the three-dimensional aspect of clay work; construction and deconstruction processes through clay-work; and the regression process" (Sholt and Gavron 2006). This study acknowledged that the process of making is as important as the final object created. Both are considered essential for the psychological process which involves an artist in the act of creation, consequently enabling expression of the self and revelation of suppressed emotions and preferences. Moreover, modelling with clay provides tactile experience by touching and haptic involvement generating the possibility of non-verbal communication in the process. The assumption that the physical-sensual-mental experience is linked to past memories of emotions embedded in the brain through touch was further reaffirmed by case studies (Sholt and Gavron 2006).

The creation of something from a lump of clay and the ability to transform the same into a form leaving imprints of the creator, has shown behavioural changes for some being able to release their feeling of grief, loss or helplessness. While using clay, a person encounters the "constructive and destructive aspects" of the material by manipulating and changing which can be associated with an individual's personality who needs therapy. Sometimes, those who are grieving for a lost person can recreate some moments from the past with clay to overcome the feeling of loss. In addition to this, clay modelling gives the chance to express images of distortion, ugliness, fear or sexual inhibitions, which many people were unable to express, and suffered as a result. The noteworthy therapeutic features which evolved from this study were - expression of emotions, catharsis, verbal communication, rich and deep expressions, revealing unconscious materials, concretization and symbolization (Sholt and Gavron 2006).

Another sculpture project initiated by the Psychiatric Hospital Kilchberg, Zurich in 1994 involved thirty patients in making sculptures. This psychiatric art therapy project received positive response by stimulating the vitality of the patients who had difficulties in using their will power and perseverance. These patients worked for two and half hours every day on sand or limestone and an exhibition at the end of the project displayed their works to family, friends and clinical staff (Erazo, Lee and Greil 2000).

For art therapy, another unique and interesting process of making sculpture is the use of found objects which have been discarded, old or are no longer needed. These objects convey different meaning when used artistically. Ally Root, an art therapist, who works with children in *Touch A Life Care Centre* in Ghana, uses this process. The children are mostly suffering from after effects of abuse, hardship, trauma, loss of parents,

abandonment and instability in life. To reach the children, art therapy has been used as art is considered “unthreatening”. Trauma-based art therapy has the possibility of enabling children to recover gradually from the painful past memories. Engaging in the process of making sculpture out of found objects and transforming these from useless objects to something worthwhile helps in healing. Works of sculptors such as Marcel Duchamp, Haim Steinbach, etc. who used found objects are very good examples of initiating the process of making art. In one of Root’s workshops children were given old tin cans, which could be cut out, crushed or smoothened (Touch A Life 2014). One of the children made a beautiful fishing boat which was shown to others. The child was able to disclose his painful past to the viewers and his personal attachment to living on Lake Volta in Ghana.

Similarly, Craig has also used sculpture as a medium. She worked with individuals with dementia using clay as a medium which generated different reactions (Craig 2012). Clay did not appeal to some participants because of its tactile quality and hence they did not find any interest in modelling. Kneading, wedging, slapping and throwing the clay involved physical activity and it was noticed by Craig that some participants, who had strong emotions of frustration, anger or depression, occasionally felt as conditions of dementia, could release their pent-up emotions in such an environment. According to Craig, giving a shape to a ball of clay was most stimulating for the people with dementia. Using their hands for pinching, smoothening, etc. they showed eagerness to see the outcome of their actions, which they found very enjoyable. The process is a sensory journey and it allowed a person to model the material and look at it from different perspective. Sometimes rolled out flat square tiles of clay have been used to personalise the surface with decoration. These tiles could easily be displayed not only for the participants to see but also to share with friends, families and others.

Mosaic is another medium that has been used by Craig in her sessions. Pieces of mosaic materials are stuck as a layer on another material or object and the space in between the pieces are filled with grout to get evenness of the surface. This process allows the participants to make choices and decide while they arrange the patterns. The slightly raised surface and tactile nature of the materials used for mosaic has an advantage for those who have sensory impairment. There is evidence to indicate the engaging effect it had on a person with advanced stage of dementia which was well brought out in a film produced by Sandwell Third Age Arts on people with dementia.

Killick and Craig have worked with people with dementia using materials such as wood, stone, metal and glass (Killick and Craig 2012). These materials are solid and last much longer in comparison to materials like paper, fabric, etc. All these materials have some weight and demand concentration, engagement and involvement in the process of positioning them for subsequent shaping, thus allowing the person to be in control.

Stained glass process has been used in a project involving people with dementia under the expertise of Christine and Steve Davidson (Davidson 2002). The participants were encouraged to make their decisions of drawing the designs and choosing the glass. Twelve panels were created for Iris Murdoch Centre in Stirling in Scotland which has a Dementia Services Development Centre to improve facilities and services for those with dementia and their carers.

For the carving of wood and stone and preparing metal casting, the support of experts is required. A pilot study was conducted over a thirteen week period involving twelve participants with dementia in art therapy activity based on sculpture-making. Six participants with the help of a professional artist engaged in sculpting human sized wooden block which had an impression of a rough figure to work on (Seifert, Spottke and Fliessbach 2017). The control group of remaining six participants engaged in singing, painting and playing games. Findings show former participants' experience of sensory and aesthetic sensations led to positive changes in their mental state and concentration, self-reliance, self-esteem and physicality. These changes were significantly higher than the control group.

A professional jewellery designer and artist, Caroline Twist, uses metal such as brass and copper to engage people with dementia in creative activities to support their identity and sense of self by using reminiscence as a tool to transform into pieces of jewellery (Killick and Craig 2012). Working closely with participants, she produces three-dimensional representations of their choice of words or something from the past that will help their sense of identity.

2.5 Digital art and people with dementia

The changes in cognition, memory and communication abilities of people with dementia lead to growing isolation, shifting relationships and limited opportunities for choice and control. Digital technology is being used for various purposes for people with dementia to share their experiences, build relationships, improve quality of life and promote general wellbeing. Besides its creative potential, it is being used as an art form for therapeutic purposes as well. Therefore, it is important to understand the conception of digital art and its use as a tool or a medium for creativity and therapy.

In 2012, Baring Foundation held a roundtable meeting on *Digital Arts and Older People* and a paper presented by Joe Randall on the topic of "what is distinctive about working with older people using digital arts and creative technology, and how this field might be developed?" (Randall 2012) Artists, while working with older people, were able to create an environment to challenge the participants and to explore further for future interactions. Three issues outlined were "digital divide, isolation and loneliness and the

relative disengagement of older people within an increasingly important part of mainstream artistic practice" (Randall 2012).

"Assistive technology" plays an important part in the life of a person with dementia, improves quality of life, health and social care services and has a parallel form which is "leisure technology". Art organisations are developing participatory programmes such as using digital technology for people with dementia to stimulate their senses. Participants are given an opportunity to explore choices in the creative processes and decide the level of engagement. All these aspects compensate to a certain extent for any physical or sensory loss in their condition.

According to Randall, the advantages are the "immediacy" and "replay-ability" in the creative process. The preference of iPad or touchscreen technology over the use of keyboard and mouse is because of its "immediacy", the feeling of directly connecting to it. Digital photography or recording a video offers immediate results, which can be seen or altered easily. Randall's paper presents the benefits of digital arts for the people with dementia in a much broader context highlighting some tested and valid case studies.

Various digital applications are used to increase motivation, stimulation and to some extent the ability to memorise (Riley, Alm and Newell 2009). The traditional memory book in reminiscence therapy has paved the way to the interactive and much more effective digital memory books. Any visual images, photographs, sections of video which are part of a person's life could be put together to create a digital memory book. Sometimes the combination of various media draws more attention and interest. One example of such an application is a memory book used effectively by a 67-year-old woman with an early stage of Alzheimer's living in Malaysia. With further degeneration of the condition of Alzheimer and being a devoted Muslim woman she forgot how to perform her prayer - *salah*. This application was a personalised digital book that served her individual need and was especially designed in five stages by A. Hashim, R. M. Rias, and M. F. Kamaruzaman. In the first stage "issues, scope, goals, objectives, target audiences and learning environment" were identified. The second stage involved designing the prototype graphically based on storyboards and determining the user interface. The contents and materials were created in the third stage. "Implementation stage" was the fourth stage to test the feasibility of the prototype. In the last stage, feedback and data were gathered (Hashim, Rias and Kamaruzaman 2013).

The whole process of performing prayer was created by multimedia and in Malay language for the woman's understanding and familiarity. The prototype was used in four weekly sessions in the presence of the woman's carer and her doctor. The result from the observations showed that her short-term memory of the process of performing prayer had improved and she was able to memorize the praying sequence. Besides improving

the reminiscence of this person, the application initiated social interaction and communication skills. Overall, the woman responded positively and showed interest and motivation to participate in using the tools for application in the specially designed prototype.

A design-led inquiry on "personhood" and "self" in HCI (Human-Computer Interaction) through theories and participant's reactions was conducted with the aim of producing meaningful digital artefacts for people with dementia (Wallace, et al. 2013). Self is theorised as an essential quality that makes a person different from another in personal as well as social context. In HCI, appreciation of self in interpersonal context has the possibility of wider implication. Personhood is something that keeps changing internally and gets affected by external factors of experiences and relationships. The study conducted by Wallace, et al involved a woman with mild dementia and her husband and how their relationship, personal as well as with design researchers, was initiated by co-creativity bringing out individual expressions in jewellery design by working together.

Jewellery is not only used as adornment but it has another quality, "precognitive expression of self for others" (Wallace, et al. 2013). It has the potential of revealing an identity, self, particular time and place and emotions attached to the item. In recent years, the digital process of making jewellery and wearable computers used by designers have added a new dimension and a different experience. Participants were provided with a set of ten probes which evoked strong and beneficial emotions in them – "camera, personal treasure, first prize rosette, second prize rosette, preserves, self-seeding, dress pattern, home pearls of wisdom and self-tree". The response for using self-seeding probe was to comfort others and first prize probe was caring for people she loved. Self-tree probe was all those people who were thankful to her helping in remembering them. The camera probe revealed images of home as a happy place and the self-seeding probe was about hugging, smiling and enabling. All these probes acted as a means of communication and opened up areas of self-awareness and enjoyment through the process of helping in creating designs, which she would be able to appreciate and connect to.

The first thing designed was a silver locket, a recognizable shape for her, reviving memories from the past. Every time she opened it, she would see different digital image inside becoming part of her life and experiences. The element of surprise of finding a new image every time held her interest. It was designed in such a way that photographs could be added and changed easily using USB port. This was a very simple piece of jewellery, which was very meaningful to her. A dress brooch like an *embroidery hoop* was also designed to hold pieces of old fabrics from their house as each fabric had a memory attached to it. The brooch was shaped as an outline of one of her dresses and the piece of fabric could be changed any time.

A jewellery box was designed to keep all the jewellery pieces and sound was recorded for each piece to associate with the fabrics. All the fabric pieces had a small RFID ampoule attached and the box had RFID technology to record any sound, be it music or conversation and to replay. Another non-digital jewellery called 'the cloud watcher' was designed as a pendant having the shape of a cloud in a rubber frame. The designs of all these items of jewellery mentioned were based on the probes which provided a deeper understanding of the complex relationships between personhood, dementia and digital jewellery.

The focus of most of the art projects using digital technology and involving people with dementia is to stimulate communication and interaction through the process of making art – painting, drawing or collage. An example is ePAD, the Engaging Platform for Art Development, a computer based device. "ePAD is an artificially intelligent touch-screen device that estimates a client's level of engagement and provides prompts to encourage engagement if the client becomes disengaged" (Leuty, et al. 2013). This disengagement happens when the participant is neither looking at nor touching the screen. People with dementia sometimes forget what they are doing and have to be reminded so that their motivation lasts for longer periods of time (Hoey, et al. 2009).

The origin of prototype of ePAD was the result of an online survey and subsequent formation of a focus group with therapists working with people with dementia (Hoey, et al. 2009). Seven therapists made an evaluation of the prototype and gave feedback on changes and improvements required to be implemented in its design. The ePAD regulated the engagement of six participants after ten seconds and was recorded by the researchers and used as logs which included screen shots of the artwork, the estimation of engagement level and its action of providing prompts. The result of this research was analysed on the basis of usability, efficiency, ease of use by the participants, assistance needed from therapists, prompting, satisfaction of ePAD design and ability to engage in art. The usability measure showed that the participants found the ePAD engaging but the prompts were less effective. Sometimes these prompts distracted the participants from their work rather than engaging them. Overall, this device was well accepted and participants took pleasure in creating art.

2.6 Neurological view of creativity

Recent advances and insights from neuro-scientific research have given a different dimension to the meaning of creativity and its production. Artistic creativity is an outcome of a combination of cognitive, emotional, and sensorimotor processes affecting the brain's creative capacity. This capacity is enabled by the specific abilities of the brain to make associations and its different levels of information processing. Therefore, creativity is considered a fundamental activity involving human information processing.

Creativity also reveals cognitive flexibility and the inter-connection of various units of knowledge gathered. Artistic creativity is a part of the creative processing in the brain where art, artistic talent and skills combine to present an artistic direction.

In this research, the approach is to understand the nature of creativity at the intersection of art and neuroscience with historical, social, psychological as well as cognitive perspectives. Dr Sarnoff Mednick, a noted American scientist, reviewed the representative theories of creativity and the effect of knowledge in creative thought processing. He conceptualised creativity as a "form of problem solving that involves an associative search of the related memory or knowledge bases for possible solutions" (Runco and Pritzker 2011). He proposed a very detailed theoretical model representing how creative ideas form and why those who are creative are expected to have these creative ideas. Dr Mednick argued that creative people have flat associative hierarchies and more likely to have "higher ability to access mutually remote associative elements" which are combined to form creative solutions (Benedek and Neubauer 2013). This assumption further addressed the issue of the brain's ability to integrate and process problems in seeking solutions is more rapid if the creative side of the brain is highly developed (Heilman 2016). Thus, the emphasis on the relation between the brain and creativity becomes relevant in this research.

Function of the brain – a brief description

The two hemispheres of the human brain are inextricably connected which provides different sets of function, behaviour and controls. Both hemispheres communicate with each other through the corpus callosum, a thick band of neural fibres. Usually the left-brain is considered the logical or analytical part responsible for sequence, verbal processing, logic, symbols, analysis, linearity and reality. It also controls the right side of the body. The right hemisphere is the creative brain and visually oriented. It is responsible for visual imagery, spatial awareness, non-verbal processing and imagination. It controls the left side of the body. Thus, both sides of the brain are distinguished by their different processing abilities. Because of these distinctive qualities, there are claims that the right hemisphere plays a larger part in processing visuospatial information and involvement in art making. Artistic creativity, which involves prefrontal activity especially dorsolateral prefrontal cortex in its processing, connects with the knowledge stored in the "temporal, occipital and parietal lobes" in the cerebral cortex of the brain (Kaufman 2013).

Swiss neurologist Julien Bogousslavsky has asserted that frontal lobe is the most important for creativity. He said, "Connection between prefrontal and tertiary sensory cortices is the biological base for extraction and abstraction, and frontal-anterior subcortical loops underlie motor skills" (Lewandowska 2014). Other researchers have

found that the dorsolateral prefrontal cortex in the frontal lobe, which is not an anatomical structure but a functional one, helps with the planning and organisation of artistic abilities. Bogousslavsky explained the dual role of the frontal lobe in creativity, which acts as a facilitator in the creative process and also restrain from various actions. He described three stages – "perception processing related to sensory activity, extraction and abstraction related to cognitive activity and execution related to motor activity", which are relevant and useful for artistic creation (Lewandowska 2014).

It has been found that there are two types of processing modes of thought initiated creations, deliberate and spontaneous, as also two types of information-based knowledge domains, emotional and cognitive. According to Arne Dietrich, Professor of cognitive neuroscience, the combination of four basic mechanisms generate creation: deliberate mode combined with cognitive information and with emotional information, and spontaneous mode combined with cognitive information and with emotional information respectively (Dietricht 2004). Once an idea is generated, the circuits of the prefrontal cortex brings this into full consciousness to be implemented into a creative expression.

Observations of neurologists

According to neurologists the interactions between the frontal lobes and the temporal, parietal and occipital lobes affect the creative abilities of an individual (Viskontas and Miller 2013). In other words, the disruptions in interactions between the dominant and non-dominant hemispheres of the brain are responsible for information processing for creative activities. This approach of intervention of neuroscientific research to understand the condition of dementia has paved the way for further investigation. The contribution of neurologists' study of individuals with dementia is considered important not only for clinicians but also for researchers involved with art. Artistic and creative expressions are very personal and subjective, therefore for investigation most of the studies undertaken involve both one to one basis and group settings.

Recent neuroscientific research has been addressing issues related to neural circuits that affect cognitive and other functions of neurodegenerative conditions of individuals with Alzheimer's and frontotemporal dementia. In these conditions, specific neural circuits are affected and may be in more than one region. As the degenerative condition progresses, studies could be undertaken at each stage of deterioration to discover how the brain reorganises particular function that subsequently can lead to behavioural changes. While engaged in any task that needs concentration and attention, the frontal and parietal cortices regions of the brain start working simultaneously (Safar and Press 2011).

Dr. Luis Fornazzari claimed artists are less likely to have neurodegenerative conditions of dementia, as they are more involved with coordination of different senses and memory executive functioning in comparison to non-artists. According to his study, artists use their brain for creative purposes by involving different neural networks, which keeps part of their brain activated much longer than those of non-artists (Fornazzari, et al. 2013). In other words, it indicates that the complexity of creation of a work of art enables the brain to retain much more of its thought process, imagination and memory.

Neuroscientists who are studying creativity of people with dementia no longer consider that only the right hemisphere acts in the processing creativity. Now the focus is more on the "interaction between the frontal and temporal lobes" which can motivate creativity (Flaherty 2005). According to the recent studies, the deteriorating verbal communication that affect left frontal or left anterior temporal lobes, has the possibility to generate visual and musical creativity from the past to emerge (Vartanian, Bristol and Kaufman 2013).

Therefore, all these observations confirm the statement "Art in the context of dementia provides a unique window into the cognitive processes of various brain regions and an opportunity for rehabilitation" (Miller and Hou 2004). The degenerative condition of dementia in the form of Alzheimer, frontotemporal dementia, vascular dementia, etc. have their own distinctive cognitive symptoms. Neuroimaging procedures such as Functional Magnetic Resonance Imaging (fMRI) clinically help to understand the regions of the brain which are activated in a creative process. Although the interpretation of the results is completely clinical, their validity is a prerequisite for any non-clinical approach to understand conditions of dementia. For an artistic enquiry, this approach is important to realise the effects of creative processes and to establish therapeutic potential.

From clinical to non-clinical approaches of framing dementia

As discussed before, dementia as a condition has been considered and associated with normal ageing process till medical interventions in early twentieth century changed its description. Though medically accepted as a brain disease, it was first framed on the basis of clinical and neuro pathological examinations (Ballenger 2017)**.** However, in the mid twentieth century it was believed to be more of a psychosocial problem based on the investigations conducted by the American psychiatrist Rothschild and his team (Ballenger 2003)**.** This was a consequence of age-related dementia which required adapting new approaches because of the growing number of people living much longer who were being diagnosed with dementia. In the latter part of the twentieth century, dementia was framed as a major public health issue and the focus was diverted to the neuroscientific and psychiatric research for treatment and cure.

This shift in approach and perception of dementia, not always associated with normal ageing process, is increasingly raising more awareness of the condition, however the stigma attached to it continues to this day. Hence, perception of dementia as a growing health-related condition has raised concern as to its societal acceptance which relates to issues of caring for the ageing population and person-centred approach (Kitwood 1988).

The person-centred approach which initially involved social and health care professionals has gained recognition over the years and now is an integral part of many projects and research. The works of Dr Carl Rogers, American psychologist, drew attention to person centred care and client-focused care emphasising the importance of the three core conditions – congruence, unconditional positive regard, empathic understanding (Gillon 2007). He believed that each person has unique qualities and an effort is required to realise their full potential for health promotion. Therefore, the person centred care approach was different from the standard biomedical approach of treating a disease. His influence can be seen in Kitwood's reference to the person-centred approach, which helped shape a different pathway in the context of dementia care.

Kitwood examined the psychosocial approach to dementia and reiterated Rogers's viewpoints on person-centred care stating that an individual with dementia is no less than any other person without the condition and having dementia should not be used as an individual's identity. His conception of person-centred approach for dementia care was "personhood". According to him, "It is a standing or status that is bestowed upon one human being, by others, in the context of relationships and social being. It implies recognition, respect and trust" (Kitwood 1997, 8). Recognition of the value of an individual irrespective of any disability or cognitive impairment is therefore given more emphasis in societal understanding of relationship with others.

Kitwood and Bredin have explained the implication of personhood by understanding "individualism" which focuses on a self which is unique and not in relation to others. However, the notion of personhood is very dynamic and it flourishes in relationship with others. In order to understand the nature of personhood, one must first disentangle the notion of individualism from personhood (Kitwood and Bredin 1992). In a person-centred care environment, the needs of a person with dementia vary according to the condition and individual identity. Kitwood presented a model which was based on the recognition of six psychological needs, which had to be accomplished while caring and supporting people with dementia. His model presents love as the centre surrounded by - comfort, attachment, inclusion, occupation, and identity (Kitwood 1997).

Kitwood has described as "malignant social psychology" the different types of processes which he found in dementia care settings that impair the personhood of people with dementia (Mitchell and Agnelli 2015). These processes have a damaging effect on

personhood and indicate insensitive and depersonalising tendencies towards caring for people with dementia. Ten categories were identified first but later seventeen categories were considered. These include - treachery, intimidation, labelling, stigmatization, banishment, objectification, ignoring, accusation, etc.

On a similar note, Sabat and Harre's social constructionist approach of selfhood supported their arguments on the general assumption of its loss as dementia progresses in an individual (Sabat and Harré 1992). Sabat provided another way of viewing the "self", with description of three discursive aspects. According to him, "Self 1 is expressed via personal pronouns; Self 2: Physical and mental attributes past and present, including beliefs about said attributes; Self 3: Social personae constructed with cooperation of at least one other person: devoted spouse, loyal friend, demanding professional, dysfunctional patient" (Sabat 2007). A person with dementia must be positively positioned socially for the self to sustain and flourish, otherwise self is deconstructed and there is loss of self.

Brooker presented four key components also known as VIPS, based on person-centred care. These are – value people with dementia and their carers; treat them as individuals regardless of their condition; look and understand at the world from their Perspective; and the social environment should be enriched giving importance to relationships in sustaining personhood and wellbeing (Brooker 2004).

With the necessity of creating a safe environment for creativity to flourish, it was important to understand the significance of the person-centred approach to people with dementia in the care situations. The above models help in encouraging personhood by emphasising each person's uniqueness while engaged with meaningful creative activities. The importance of offering sensitivity, empathy and respect not only to the individuals but equally to their creative expressions became obvious. The focus therefore was more on understanding the subjective experience of each person with dementia, the things that matter to the person and ways that support their innate wisdom and individuality in creative engagements.

Person-centred and selfhood approaches were incorporated into a three-year study involving 14 people with dementia in care home settings in the UK. The study included documentation through observations and video recording and use of an observational tool - Dementia Care Mapping - to report the findings of participants' daily engagements in their wards and during creative sessions of painting and collage making. The questions addressed in this study were to find out what kind of interactions happened, the ways participants expressed themselves and the influencing factors, the connection between the interactions that were having an effect on self-expression and general wellbeing (Kelly 2010). It enabled a deeper understanding of ward staffs' actions

prioritising their physical needs rather than psychosocial needs which has direct consequences on their wellbeing and ill-being. On the other hand, the occupational therapists engaging participants in creative activities recognised and supported the self, and considered positive interactions as being "facilitative and celebratory", raising their wellbeing and self-confidence. The study recommended the person-centred approach by stating, "If practitioners are taught to recognise and support verbal and visual expressions of the self of the person with dementia, this might promote a new way of viewing and engaging with them" (Kelly 2010, 121).

Recent trends and evidence from studies discussed in this chapter show that there are non-clinical influences especially through art facilitating quality of life for people with dementia, their family and carers. Previously, the structural framing of dementia has been largely dependent upon the clinical research outcomes of biomedicine and neuroscience. Therefore, an enquiry into the creative engagements of people with dementia could facilitate a realisation of the impact of artistic activities with a person-centred approach, further helping to establish their creative potential.

2.7 Summary

There is a wide array of perspectives on the subject of art and dementia. Art as a communicative medium has been used for treatment as well as leisure activity. Although the focus of this research is on creativity and not on therapeutic purposes, the information it makes available comes under a broader category of art and art therapy. Understanding the benefits of art and its process of creation became a prerequisite for developing a research methodology before raising questions on issues for further investigation.

The literature review had a multidisciplinary approach bringing together important evidence-based studies and projects relevant for research in visual arts, digital arts, museum studies, creative behaviour and neuroscience. The common areas between art practice and art for health were identified so as to understand recent developments, implications and limitations. Regarding art practice, neuroscientists and therapists have worked with groups of individuals who engaged with artistic endeavours and projects after their diagnosis. There are instances of artists carrying on with their work even after their diagnosis. It was important to review the creative potentials of both.

As the sculpture-making practice is the focus of this research, relevant methods were reviewed. Besides the traditional methods, the use of digital technology provided some additional benefits to people with dementia. The contextual review of the existing technologies associated with digital art, digital tools and software became a source for further exploration. The prime concern in this review was to bring all these practices related to art and dementia together on one platform.

Chapter 3: Preliminary study - Investigating perceptions of physical and digital sculptures

The previous chapter identified and synthesised various studies examining the impact of art on people with dementia which initiated the planning of this preliminary study. It was considered important to investigate their understanding and experience of sculpture prior to developing any creative activities on sculpture-making. Sculpture evokes different emotional and cognitive responses through the sensation of touch (Dent 2014). There is a connection between the sense of sight and the sense of touch which makes it a multisensory experience and it is possible to have a sense of the tactile quality of a material without touching it (Martin 1976). Thus, while viewing a sculpture either in a physically exhibited space or digitally in a virtual space, its tactile element can be experienced.

In addition, the sense and experience of physicality and embodiment of sculpture can be felt with or without touching it. Read had a different point of view, he said, "sculpture is an art of palpation—an art that gives satisfaction in the touching and handling of objects" (Read 1956). According to him, if a sculptural creation is not touched or felt, it is impossible to have a subjective appreciation of its existence. On the other hand, Carpenter argued that sculpture is a form of visual art and not tactile art (Gaut and Lopes 2013). His viewpoint was that appreciation of sculpture is not because of its tactility but mainly through its visual awareness. However, both authors accepted that sculpture engages the senses of touch as well as sense of sight. Viewers' experiences of looking at sculpture in real space and in a virtual space on a computer screen may turn out to be different and therefore it raises a question as to which of the senses, sight or touch, is considered dominant.

In this preliminary study, the materiality of sculpture and its tactile engagement were considered key to understand the level of perception of sculpture by people with dementia. As discussed in the earlier chapter, people with dementia may see both physical sculptural forms and those which are mediated through digital technology in a different way, which affects their appreciation of sculpture and their overall experience. Therefore, a methodological framework was developed entirely based on an exhibition of digital and physical sculptures and the reactions and responses of people with early or moderate stages of dementia. The following research questions guided the study:

- How do people with dementia experience three-dimensional art such as sculpture?
- What emotional effect does interaction with digital sculptures have on people with dementia?
- How does interaction with physical sculptures differ from interacting with sculptures mediated by a computer screen?

Considering the exploration of perception of three-dimensional forms in answering these research questions, this study raises the following sub-questions regarding the effect of dementia on artists: What is the nature of perceptual differences of people with dementia having art backgrounds and healthy artists without any neuro-degenerative condition?

Addressing these questions was important to aid the development of further creative engagements of making sculpture with people with dementia and investigating any other issues which may influence their creative ability. Beside their difficulties associated with memory loss they might experience secondary problems such as irritability, aggression, personality changes, and anxiety. The main aim of the preliminary study was to identify ways of stimulating people with dementia using different kinds of sculpture in both physical and digital spaces and the possibility of using this method as a tool to develop meaningful activities for creative pleasure.

The results from this preliminary study were published in the peer-reviewed journal - *The International Journal of New Media, Technology and the Arts* (Chauhan, Bobrowicz and Ang 2017)

Overview of data collection methods

Data collection is vital for any research study both impacting on and leading to the outcome of a study. It became necessary to understand the qualities of quantitative and qualitative data analysis and to find out the suitability of using them to analyse participants' perceptions. A comparative evaluation enables a researcher to decide the best method to adopt for research. Quantitative analysis is very useful when a specific information is sought without a need for any explanation, via statistical, mathematical or computational techniques. It is mainly used for larger sample numbers to quantify attitudes, opinions, behaviours and other variables.

Data is not simply figures and records, it includes subjective experiences as well. This is where qualitative research enquiry is useful, as it helps in defining particular phenomena or differing categories during the process of research. Quantitative surveys and statistics are not sufficient when a research focuses on the subjective qualities of human behaviour (Holliday 2002). Quantitative research is helpful in determining the relationship between phenomena or categories which may have been noted and described prior to commencing the research. In order to understand information related to emotions and behaviour of participants, this method may not give insight and depth of understanding of a particular setting and particular place of a group of people. The main consideration for this research was participants' perspectives. One of the reasons for considering qualitative research was that it could be studied in natural settings where the moments and the meanings of experiences of participants could be interpreted to

make sense of their perceptions and reactions (Denzin and Lincoln 2011). Hence, there was a need to include this research method to collect detailed cultural information which informs us about the behaviour and values of individual participants in a particular social context. Sources of data collection include individual interviews, focus groups, review of documents, observations and action research.

The data collection method varies from unstructured, semi-structured to structured techniques. Unstructured and semi-structured come under qualitative interviewing methods. Cohen et al said interviewing is "a valuable method for exploring the construction and negotiation of meanings in a natural setting" (Cohen, Manion and Morrison 2007). There are three main types of in-depth interviewing: informal conversational interview, guided interview and open-ended interview (Edwards and Holland 2013); to address the main research question and depending on the condition of dementia, the best way to approach the interview questions was to consider all three at the time of interview. Some prior knowledge of participants' level of dementia was required as guidance to begin the process which had to be carried out as open-ended as well as informal.

In order to gain multiple perspectives of a research undertaken, Wolcott presented a triangular model of methods of examining, enquiring and experiencing. *Examining* is mainly done using existing records which could be from archival documents, artworks, etc. *Enquiring* happens when questions are asked in interviews and questionnaires and *Experiencing* is through observations. It was assumed that *Enquiring* and *Experiencing* were an integral part of this research as it related to observation of participants and their interviews. Actually, all these are interconnected and it was by first *Experiencing* that systematic *Examining* and *Enquiring* could begin; this was exactly how the research was structured.

Furthermore, the effectiveness of qualitative enquiry largely depends on the following different types of evaluation (Myers and Barnes 2005):

- Behavioural attitude - participant's own involvement in past and present.
- Opinions and values - participant's personal views
- Feelings - participant's emotional state not based on thoughts
- Knowledge - to acquire facts
- Sensory - relates to what was touched, heard, tasted or smelled
- Demographics - background questions such as gender, age, education, income, etc.
- Impacts and outcomes

These points facilitate the nature of qualitative data analysis, which is to present emerging themes, patterns, concepts, insights, and understandings (Patton 2002).

Qualitative research, being descriptive and interpretative, was more appropriate for investigating through interviews how participants construct their own meanings of the sculptures displayed. The interview investigation structure has seven stages: "thematising, designing, interviewing, transcribing, analysing, verifying and reporting" (Fink 2000). Following these stages and using qualitative method in this research, a meaningful conclusion could be expected at the end of the research study.

3.1 Methodology

This preliminary study was conducted over a period of three months, from December 2014 to February 2015, and involved seven participants with early or moderate stage dementia. Before planning the sessions, ethics approval was obtained from the University's Faculty of Sciences Research Ethics Advisory Group for Human Participants as the research involved a vulnerable group with cognitive impairment. The ability of the participants to make decisions and their capacity to communicate were important for this study. Therefore, the Mental Capacity Act 2005 Code of Practice section 30-33 applicable in England and Wales was taken into account (MCA 2005 (c.9)). It provides guidelines regarding the mental state of a person having capacity or lacking capacity to make particular individual decisions. At the time of obtaining informed consent to take part in the study, it had to be established that participants understood the information regarding the study for which their decisions were required and that they would retain the information during the session to be able to make their decisions and be able to communicate. In circumstances when the participants had any difficulties in taking decisions indicative of their lack of capacities, then help from family members or carers was to be sought with the provision for participants to withdraw from the study at any point.

All the participants worked under the guidance of session facilitators at the Beaney House of Art and Knowledge in Canterbury and Dementia Café Afternoon in Whitstable. Before the study commenced, permissions were obtained from participants' family members, health professionals involved in the two venues or appropriate authorities in their residential care homes. They also confirmed participants' ability to make every day simple decisions independently, such as about preference of food, clothes, etc. Written consent to take part in this research, which was to be video recorded, was also obtained from the participants. Their willingness to participate had to be ensured constantly before and during the study as well as their understanding and ability to communicate their decisions independently.

For the purpose of interviewing the participants a systematic method had to be developed which included displaying varieties of sculptures so as to facilitate their responses. A family member or carer accompanied each of the participants to the

exhibition space in the Production Studio at School of Engineering and Digital Arts (EDA) for the study where the sessions were scheduled to last between thirty and forty-five minutes so that the participants could pay full attention and participate in interviews. For three of the participants who were unable to travel, the study had to be carried out at their care home or private residences.

Study design

In this study, two methods were adopted for the purpose of data collection. At the beginning of the session a questionnaire provided a quantitative method of data-gathering for demographic description only. Afterwards, participants were given an emotion chart which was prepared especially for this study. This emotional-response chart was based on the Plutchik model's classification and colours associated with each emotion. Another reference for this emotion chart was taken from the Art and Wellbeing project of engaging with museum object handling at the Beaney House of Art and Knowledge, conducted by Canterbury Christ Church University, Canterbury (Johnson, et al. 2015). The icons depicted different faces with positive and negative emotions and the colours associated with it. This chart was designed to express participants' feelings and help them to communicate in a different way rather than writing or explaining verbally. It had the icons of different but very common emotions - happy, confident, curious, inspired, sad, afraid, bored, and disappointed. These were handed over to participants before the session and after the participants had seen the displayed sculptures.

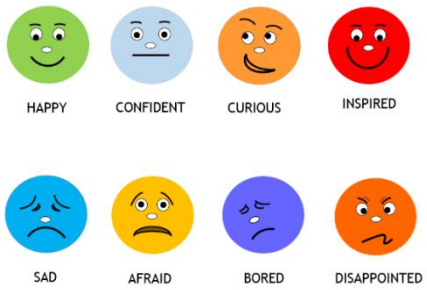
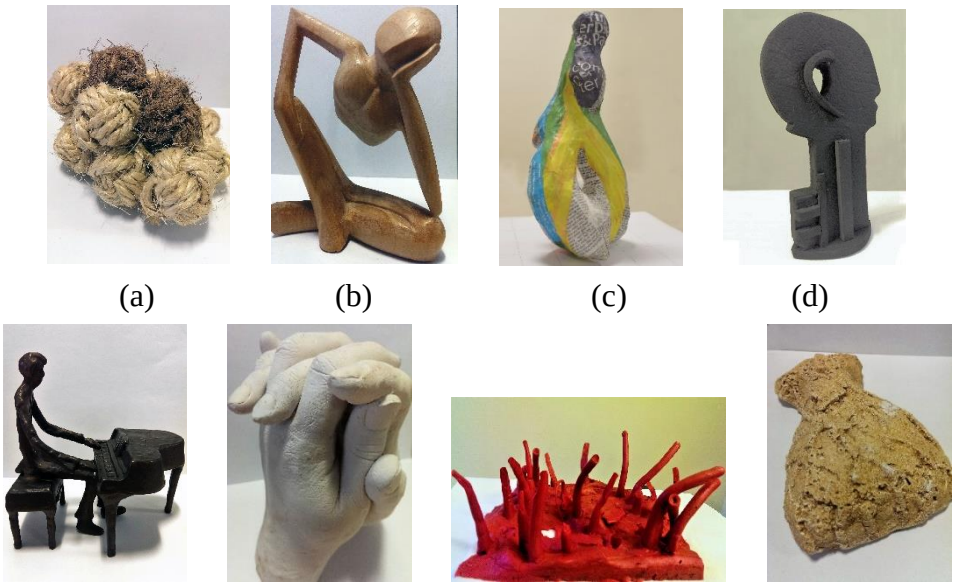


Figure 12: Emotion chart for the participants. Adapted from Plutchik model and Art and Wellbeing project (Johnson, et al. 2015)

Once the participants had completed the questionnaires, they were taken to the exhibition space. First the digital sculptures were shown on an Android tablet based on studies with older adults which demonstrate that touch-screens are easier to handle than a computer, keyboard, and mouse (Randall 2012). This was followed by showing the participants the real physical sculptures displayed on pedestals and were encouraged to touch and feel each exhibit.



(a) (b) (c) (d)

(e) (f) (g) (h)

Figure 13: Sculptures made of different materials

(a) *Crossover*: Rope sculpture (b) *Disposition*: Wooden sculpture (c) *Swerve*: Papier-mâché sculpture (d) *Duality*: Hard-rubber sculpture (e) *At Play*: Metal sculpture (f) *Clasp*: Plaster-of-Paris sculpture (g) *Protruding Red*: Soft-rubber sculpture (h) *Earth-Unearth*: Plaster-of-Paris sculpture

In total, eight sculptures with a variety of representational forms as well as abstract forms made by local artists were displayed. The selected sculptures were small in size to make it easy for the participants to hold them in their hands. These sculptures were made of materials with different textures: metal, rope, hard rubber, soft rubber, plaster of Paris, papier-mâché, and wood (Figure 13). While the participants were viewing, handling and touching each sculpture, questions were asked to encourage meaningful conversation.

The other method of data collection was interviewing the participants while they were viewing and handling the sculptures in the exhibited space. Therefore, open-ended, semi-structured interview questions were carried out. The focus was to engage the participants through interviews in order to understand their perception of sculptures, the reason for their preferences, and their attitude towards creativity. The sessions were video recorded as there were possibilities of non-verbal communication such as hand gestures, body movement, etc. of the participants which could contribute to the interpretations and evaluation of the data (Garcez, Duarte and Eisenberg 2011). A qualitative data analysis computer software package – Nvivo - was used to thematically analyse the collected data. The analysis of themes is the key aspect of qualitative analysis. Thematic analysis as described by Braun and Clarke is “a method for identifying, analyzing and reporting patterns within data” (Braun and Clarke 2006). In this research, the thematic analysis having inductive approach involved the following six phases - familiarization with data; generation of initial codes; searching for themes

among codes; reviewing themes; defining and naming themes; and producing the final report.

3.2 Findings and discussion

Being a preliminary study, there was a small sample size as the needs and requirements of the participants had to be considered. The total number of participants was seven out of which four were female and three were male. Two participants were between sixty and seventy years, two were between seventy-one and eighty years, and three were between eighty-one and ninety years. The table below shows the relationship of age group and gender as well as the participants' conditions. It was evident that the participants had different types of dementia. Most of the participants were unaware of their existing conditions and therefore their accompanying family members or carers provided this information. Two participants had Alzheimer's disease, two had mixed dementia, two had vascular dementia, and one had fronto-temporal dementia. Six participants were in the stage of mild dementia, and only one had moderate dementia.

Age	Gender	Type of Dementia
71–80	Female	Alzheimer's disease
81–90	Female	Mixed dementia
60–70	Female	Vascular dementia
81–90	Female	Vascular dementia
81–90	Male	Alzheimer's disease
71–80	Male	Fronto-temporal dementia
60–70	Male	Mixed dementia

Table 1: Age, Gender, and Condition of Participants

All participants were British (White) in origin and lived in Kent. The specificity of the demographic questionnaire gave basic information about their background in art also. It was found that three participants had an art background, three were interested in art, and one had no interest.

The display of sculptures included eight digital and physical sculptures. Participants were shown a digital sculpture first on an Android tablet, followed by its actual physical sculpture (Figure 14). This method adopted for the preliminary study triggered different reactions when participants saw the same sculpture digitally and then physically. It turned out to be effective when interviewing them as each participant reacted in a unique way in the presence of a displayed sculpture. Evidence of their reactions in the video recording of the individual sessions supplemented the verbal with the non-verbal communication. Before the interview started, all the participants, except one, spent more

time observing the sculptures and waited for interview questions to begin. The video recordings showed different facial expressions during their interactions - looking away, looking closely, smiling, shaking their head in denial, getting closer physically, etc. When they were interviewed they expressed similar reactions to what had been seen before with facial expression and hand gestures and now they expressed these with words such as *"outrageous"*, *"cunning"*, *"ugly"*, *"soothing"*, *"very real"* and *"prickly"*.

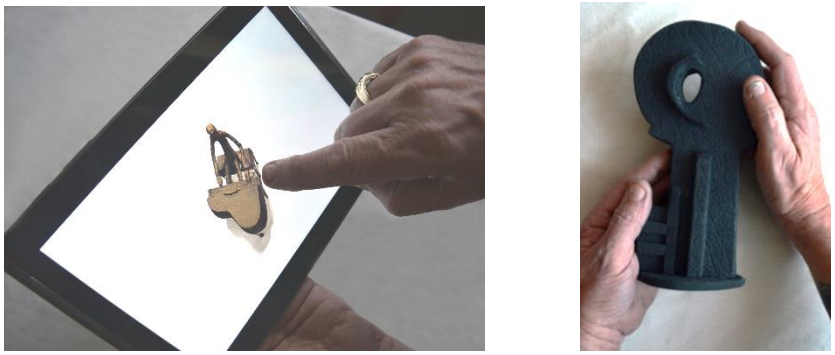


Figure 14: Interacting with digital and physical sculptures

All the participants interpreted the forms of digital sculptures on tablets in their own way but became more observant and interested when they saw and touched the physical sculptures displayed. Findings from the interviews and video recordings indicated that this method of display facilitated exploration of personal likes and dislikes as well as social and emotional issues. They were not at all aware of sculptures which could be created using digital technology and for all of them this was their first experience of seeing digital sculptures.

In the conversations, participants' backgrounds often came up and sometimes they talked about their previous knowledge or experience of art and other creative works. Subsequently, the sculptures became a source of communication, which was the primary intention. When they were asked about their interest in technology, it was found that only one participant (male, 71–80 years) had an engineering background, which he had mentioned in the interview. On the other hand, another participant (male, 81–90 years) who used to be a printer did not mention anything about his previous technical ability or knowledge. Although they had spent equal number of years working in their respective fields, their abilities to remember were different.

Based on the observations and interviews, this study confirms that it is difficult to generalize the findings as dementia can appear at any age, and its stages can vary from person to person, depending on which part of the brain is affected. The oldest participant (female, 81–90 years) who had early-stage dementia responded to all the questions with verbal fluency, hesitating only when she was asked to recognize the colours. She told in the interview that beside her normal age-related eye problem, she had visual difficulty

in identifying colours. However, the youngest participant (female, 60–70 years) in this study communicated the least because of the state of her moderate stage of dementia. Interestingly, a female participant (71–80 years) showed the most interest and curiosity although she was not that much interested before the session.

The interviews were transcribed and the key topics and phrases identified were later analysed thematically. The five themes which emerged were - an approach to sculptural forms, tactile response, attitude towards traditional and digital methods of making sculpture, recognizing and reminiscing forms, and emotional responses. These categories broadly address the first research question about the experience of sculpture by people with dementia. The experience by the participants was not based on the difference between two-dimensional art, such as painting, and three-dimensional art, such as sculpture, though the comparison is inevitable. Rather, this study emphasized the receptive quality of sculpture which triggers participants' imagination and leads to its acceptance and appreciation.

Participants' first observations corroborated the three-dimensional form displayed in front of them were seen as a sculpture. The forms could be seen differently by changing its position. The front, back, sides, top, and bottom gave the participants different angles and views, thereby eliciting different experiences. Some of the participants pointed out how a particular position looked more interesting and how the sculpture looked like a completely different form from what they saw at first. The surrounding space and the changes in light and shade also enhanced the way the participants perceived each sculpture. The physical qualities of the sculptures, such as the materials and textures, greatly affected the participants and had an influence on the way they appreciated or perceived a sculpture. Even though they could not recognize the material, they experienced the sensations—the gooey softness of the soft rubber, the dry roughness of the rope, the cold feel of the metal, etc.

Generally, preconceived ideas and previous knowledge influence people's observations, but in case of people with dementia, it does not always apply. In this study, each participant's observation of the sculptural form was affected by factors related to their health and present state of mind. Interestingly, it was found that the participants with some background knowledge of art were not as spontaneous in responding to the interview questions and were a little hesitant and took time to respond. In comparison those who did not have an art background showed more inquisitiveness, gave their opinions freely and openly asked questions showing more curiosity.

The second research question was to find out the emotional effect of digital sculpture on the participants. This was addressed by showing them sculptural forms on an Android tablet. For all participants it was their first experience seeing such works, and there was

a high level of curiosity among all participants except one, who showed less interest in the session due to advance state of dementia. Even though participants had no idea what digital sculpture was, their interaction with the tablet was well received. It is possible that they associated this with their experience of looking at the screen of a TV or mobile phone. An introduction at the beginning of the session was required to explain that they were viewing a sculpture on the tablet screen. Although they did not show any doubt, they had negative and mixed feelings about its existence in comparison to physical sculpture and its process of creation. The reason could be that the physical existence of sculpture is generally so deeply rooted in everyone's mind that, given a choice, the preference will be more for traditional methods and mediums. This was evident in the participants' responses.

An interesting finding was that all the participants had better concentration as they were looking within the frame of the tablet screen. It could be due to a much more controlled space surrounded each sculpture which allowed far less distraction. Video recordings of the sessions showed the participants' overall excitement of holding a tablet and their eagerness to see the sculpture from all sides. Their facial expressions changed, and they became more conscious of the displayed forms when they were asked about their opinion of the sculptures. They also made efforts to identify the material and speculate the size. This study helped in identifying the preferences of materials and textures of sculptures as seen on the screen of the tablet by people with dementia. Participants preferred rough and uneven surfaces of sculptures, as they provided more depth and may have been more appealing to the eye.

As mentioned earlier it was inevitable that the physical sculptures were always compared with digital ones, and there was an apparent preference for the physical. However, it was found that the participants conversed most and raised questions while interacting with the digital sculptures. Though the participants mentioned they were not able to feel or experience its physical presence, in the end it turned out to be more stimulating. The physical sculptures take up an area in the physical space; therefore, they are easily noticeable by the participants and the interaction is instantaneous. One of the participants had an interesting and valid observation about the tablet: that it keeps so many forms hidden in a thin flat screen. This differentiation in real and virtual space is what affects the existence of a sculpture and the difference in its experience.

An individual's sharing of space in the real world provides the feeling of closeness to any physical object. This could be a reason for one of the participants expressing in her interview the closeness to physical sculptures compared to digital sculptures. The digital sculpture therefore distanced them from reality. With visual and perceptual difficulties people who have dementia may not be able to gauge their understanding of real and

virtual space. This may cause difficulty in accepting the existence of anything virtual and thereby not appreciating it.

Approach to sculptural forms

Indicating the sculpture displayed in front of each participant, the first question asked was, *"What do you think of this sculpture?"* (All the participants accepted the forms they were seeing as "sculptures;" none of them questioned the art form.) Six participants' first comments on digital sculpture were about recognition of the sculptural form and then the material of the sculpture. Interestingly, one participant started the conversation on the title given to the displayed sculpture and about its meaning. Some pointed out the weight of the sculptures as *"fairly light"*, *"light"*, *"not so heavy" or "heavy".* The size of the digital sculptures was overlooked by all participants.

In comparison, the physical sculptures evoked their responses differently, initiating conversations on form and material as well as the size of each sculpture. This shows the manner in which the participants perceived the sculptures in digital space and, later, in the actual environment. An additional advantage was the space surrounding the displayed physical sculptures making it easy to compare, which was not visible on the tablet screen. Therefore, participants could detect the size of the physical sculptures faster and more accurately compared to the digital ones. None of the participants were able to perceive the size of the digital sculptures correctly, and five participants said they were unsure. While looking at the physical sculptures displayed on the pedestal, four participants commented that the sculptures were either *"small"* or *"very small".* The remaining three used hand gestures to show how small the sculptures looked to them.

The recorded conversations of the interviews confirmed that the participants discussed mostly about the materials used for the sculptures. Judging the materials which participants guessed on the screen and then looking at the physical sculpture was found to be very stimulating. Interestingly, all participants wanted to look at the physical sculptures to confirm the materials they had presumed. Identifying the materials on the tablet was found to be more difficult by everyone. However, most of the participants could guess correctly at least four of the eight digital sculptures. It was found that they could judge better when they saw the physical sculptures. Five guessed all of the materials used to make the sculpture accurately after touching the sculptures while two participants were able to guess less.

Tactile response

Generally, the texture of any material is associated with the sensation of touch. This tactile sensation gives sculpture its unique quality. It was evident that while participants were handling and touching the sculptures, they were able to describe their feelings and

emotional responses more openly. Participants in their conversations about materials brought up texture and the tactile sensation of the materials. The surface of the wooden sculpture, which the participants saw on the tablet and as a physical sculpture, was presumed to be smooth and the surface of the metallic one to be cold. Out of eight sculptures, two had rough surfaces, and the rest were comparatively smooth. Interestingly, participants mostly preferred the sculptures with rough and uneven surfaces to the ones with smooth and soft surfaces.

The emotional responses of participants' experience of different textures could be because of the difference they felt between the rough and smooth surfaces. The quality of rough surface is evidently more evocative and exciting. In comparison, the quality of a smooth surface elicits flat, cool, calm, and formal reactions emotionally. Thus, participants' responses were an outcome of their perception of the material, which they may have experienced earlier and now they experienced the same after touching the sculptures. Moreover, it somehow connected with their identity and selfhood. One of the participants (female, 71–80 years) had a background in basket weaving, and she liked touching the sculpture that was made using rope. Another participant (male, 60–70 years), who had background in woodcarving, immediately identified the wooden sculpture displayed on the tablet. His conversations mainly centred on woodcarving and polishing in comparison to the use of other materials. With the exception of one participant with moderate dementia, who responded minimally, it was found that those with an art background, compared to non-artists, were keener to discuss the materials used to make the sculptures. For them, the material and form existed together to make a sculpture complete.

Attitude towards traditional and digital methods of making sculpture

In the interviews, all the participants expressed their lack of knowledge about digital technology and computer skills during their interactions with the digital sculptures on the tablet. However, five participants showed curiosity and positive attitudes. Some of their comments were as follows:

> *"I am really excited now. It's like watching telly and you can repeat…see the angle you want."* (Male, 71–80 years)
>
> *"I love that. Can see all the sides, and the bottom. It's nice from the top too."* (Female, 81–90 years)

It was evident from the video recording that the remaining two participants did not show much interest or any eagerness. Nevertheless, everyone at some point in his or her conversation mentioned age-related inhibition for learning new technology.

> *"I have never liked handling things; I cannot do it at this age."* (Male, 81–90 years)
>
> *"Learn again…now, no way."* (Female, 71–80 years)

This confirmed their preference for the traditional medium of making sculpture than the digital method.

Another interesting observation was that all participants were aware of computers and could distinguish between a keyboard, mouse, and touch screen. They showed preference for using touch screens compared to a keyboard or handling a mouse. This confirms previous studies of older people's preferences toward touch-screen technology (Randall 2012). Following are a few comments for their positive reactions to the touch screen:

> *"I like to touch the screen, will that help me to make something?"* (Female, 71–80 years)
>
> *"My wife asks me to email our daughter. I like using iPhone but I hate to touch mouse and use computer."* (Male, 71–80 years)

Participants were also asked which of the physical and digital sculptures they liked and disliked. A few had similar opinions but had different reasons for their choices. One participant (female, 60–70 years) disliked the digital abstract sculptures made of plaster of Paris and commented, *"Not good,"* but she liked the physical version the best (Figure 13h). The participant's comment was, *"Like to hold it, (I) like the texture."* Another participant (male, 81- 90 years) liked the abstract digital sculpture made of rope the best - he said, *"It looks fairly real"* - but he disliked the physical one (Figure 13a) - *"It is too rough; I like something soft and warm."*

There were different reasons participants mentioned in the interviews for their liking the digital sculptures: they looked better than the physical sculptures; could be seen from every angle; materials used could be identified; and they reminded the participants of some other sculptures they had seen before. The reason for disliking digital sculpture was predominantly their preference for the physical. Other noted reasons were that the form was not interesting enough and did not remind them of anything in particular and that it was too modern and abstract. According to the participants the best physical sculpture was chosen because it looked realistic and familiar and could be touched, held, or displayed in their homes. Those sculptures which they found had uninteresting form, incomplete formation or where they disliked the material used were considered the worst physical sculptures.

A most interesting observation was that throughout the study the participants' curiosity about digital sculpture seemed to be because of its unfamiliarity and newness to them. One participant who had very little interest in art asked, *"Can you make any (kind of) shape on computer?"* (Female, 81–90 years) A participant who had an art background made the following comment, and it clearly shows that he was judging the process the way he perceived the material and his knowledge of the process of carving. *"You can*

make out what the sculpture is made of, is not it?…any material. (I) do not have to carve my wood" (Male, 60–70 years). These queries and curiosity show the possibility of this new approach of making sculpture more perceptible and acceptable. Looking at digital sculptures turned out to be very stimulating, and participants initiated conversations themselves rather than waiting for interviewers questions.

Recognizing and reminiscing about forms

There was a mixed reaction to the different types of sculpture by the participants when they stated their preference. Some of the sculptures displayed were representational, and others were abstract. It was found that those with an art background preferred the abstract forms more, and those without liked both. The abstract shapes of sculptures also prompted participants' imaginations, which brought out rather unusual interpretations. One of the abstract sculptures that was made of soft rubber held the most attention and became the centre of a long conversation (Figure 13g). Though it was disliked the most, it also raised lots of interest among the participants. According to them, it looked like the stumps of trees, a field after the grass is cut, wind blowing on the grass, and even worms. A sculpture that was made of metal showing a man playing a piano was very much liked (Figure 13e). It had some familiarity with their lives which they could easily associate with music, someone playing piano in their family, and even a few famous concerts they remembered.

An abstract sculpture made of papier-mâché (Figure 13c) looked like a rabbit to one participant (female, 81–90 years). She remembered a rabbit in her back garden she was very fond of. The same sculpture had an unusual effect on another participant, who had moderate dementia (female, 60-70 years). As it was the last exhibit, this participant picked up a serviette lying near her table and started folding it by making creases. She avoided answering the interview questions. It is possible that this participant, who was an artist, gave her answer with her gestures and the sculpture may have reminded her previous knowledge of the material or its use.

Sometimes in the conversations interesting descriptions and use of terms, which the participants normally did not use, came up. This was especially noticed and pointed out by the family members or carers present with them. For example, they mentioned words such as *"wonky wiggly", "metamorphosed",* and *"Turk's head".* Some of the participants associated things they had seen before with the exhibits. While reminiscing, they shared some personal moments from their lives. One participant commented on looking at the physical sculpture made of soft rubber (Figure 13g): *"I don't like it. Looks like Paul's [son's name] cooking. [I] Do not like to look at it, but I eat it"* (female, 71–80 years). Another participant commented on her fondness for music when she saw the sculpture of a man playing piano (Figure 13e): *"No, (do not like) none of the really*

modern stuff. Something nice and soothing and sensible…Something calm and quiet…Matt Monro." (Female, 81–90 years).

Some of the participants recollected names of some sculptors that they associated with the works displayed. The Renaissance artists Leonardo da Vinci and Michelangelo were mentioned when looking at the realistic plaster cast of clasped hands (Figure 13f). Two participants mentioned British sculptor Henry Moore, possibly associated with abstract sculptural forms. Rodin, Giacometti, and Brancusi came up in conversations while the participants were looking at the form of the metal sculpture (Figure 13e). One of the participants was not able to remember seeing any exhibition of sculpture but he remembered seeing Turner's paintings in an exhibition in London recently because he liked it very much. Most participants faced problems remembering the names of sculptors or any artists. Even though they had no art background, few were able to name famous painters such as Turner and Picasso. Interestingly, they were curious to know the names of the artists who made the displayed sculptures, and one participant asked whether the artists were famous which indicated as growing interest in artistic interactions.

Emotional responses

Participants were given a chart based on different emotions - happy, curious, confident, inspired, sad, afraid, disappointed, and bored. These icons of moods was based on positive and negative emotions that could be associated with any art activity. Happy, curious, confident, and inspired are positive emotions that affect our attention, awareness, and memory. Happiness could be associated with the participants' general well-being. Curiosity and confidence are signs of optimism. Curiosity represents an interest to know something unknown and confidence is an approach that facilitates learning. Inspiration is usually experienced internally which could motivate one to act externally. All these emotions have the power to affect the way we think. The negative experiences such as sad, afraid, disappointed and bored are found to be difficult emotions. A person may experience these emotions for various reasons but there are ways to transform them into something positive.

There was a possibility that interacting with visual art forms such as sculpture would influence the participants' responses and their decision-making. Their selections at the start of the session established the mood they were in before they saw the display of sculptures. The same process was repeated at the end of the session after they had seen all the exhibits. This was mainly to find out how the interactions with different sculptures made them feel. For this study, these emotional responses were utilized for reasoning, decision-making, and creative endeavours.

Table 2 shows the comparison of emotional reactions before and after the sessions they experienced. Six of the participants were *"happy"* after seeing the exhibits, and one participant was *"confident".* The participant who was *"sad"* before the session began was in a care-home environment and it gave her immense pleasure to see the displays rather than moving to a new environment of a gallery space. Visiting art galleries to see any exhibition was away from her comfort zone of the known surroundings of her care home which she was reluctant to leave.

One of the participants who was *"happy"* and *"curious"* at the beginning of the session felt *"confident"* afterwards. This participant had an art background but he had not been feeling motivated lately to create sculptures. In the interview, he said he felt this way mainly because of his recent memory loss and inability to use colours with brushes while painting. After seeing the exhibits, he felt *"confident"* in using coloured material instead of painting with colour using brush. In the case of another participant, at the beginning she was very *"curious"* to participate and see the sculptures. She felt very *"happy"* afterwards, as the exhibits made her think as she found all the sculptures very different and unique. She felt "useful and valued" giving her opinion in the interviews. All these findings confirm interacting with both physical and digital sculpture has a positive emotional effect on people with dementia.

Number of Participants	Before Session	After Session
3	Happy	Happy
1	Happy, Curious	Confident
2	Curious	Happy
1	Sad	Happy

Table 2: Emotional response of participants before and after the session

3.3 Comparison between perception of artists with and without dementia

Research in arts, psychology and neuroscience have confirmed that visual artists perceive the world differently than those who do not have any art background (Seeley and Kozbelt 2008; Chatterjee 2004; Ostrofsky, Kozbelt and Kurylo 2013). Their perception of an artwork is largely linked with their own practice or knowledge of material, process or self-reflection of their experience. In the context of the preliminary study, further research questions arose about artists with dementia and the way they perceive sculpture. What is the nature of the perceptual difference of artists who do not have any neurodegenerative condition?

The discussion of prominent artists who were diagnosed with dementia and its effect on their art practice was presented in Chapter 2.3. These artists carried on working even

after their diagnosis and their abilities were influenced by their knowledge of techniques of working in their respective artistic mediums. The change in their method of working became noticeable as the condition progressed and to accommodate their inabilities they adopted other techniques and method of working which they were familiar with. This indicated that, even though the condition affected their practice, their knowledge of using different techniques or mediums could be seen in their works.

While investigating the perception of physical and digital sculptures by people with dementia in the preliminary study, a question on the influence of participants' art background surfaced. Out of seven participants three were artists, but they did not practise art anymore. Only one of them (male, 60–70 years) still tried engaging in drawings. The other two participants were female and they showed no interest or initiative to do anything artistic after their diagnosis according to their family members. For a comparative study, a control group of three participants was selected who were within the age group of the other three participants who had dementia. All the participants were female, two in the age group of 71-80 years and one in 60-70 years. They were all artists, two participants were ex-teacher and educator in arts and one was an ex-professional artist.

The video recording revealed that participants with dementia spent significantly more time looking at each work compared to the control group. The interview questions had to be repeated. Their answers were very brief, in short sentences and they took longer to answer. One of the reasons could have been the visual and cognitive difficulties they experience due to their condition, which slowed down their judgements. The other reason could be more use of non-verbal communication, such as hand and head movements before expressing verbally.

Neither the control group participants nor the participants with dementia were aware of using digital technology for making sculpture. However, the former group were aware of digital arts as new media. An interesting finding was that the control group participants discussed the physical sculptures more than the digital ones, unlike the participants with dementia. They spent more time looking and commenting on each physical sculpture, although they mentioned that the digital sculptures were more *"appealing"*, *"intriguing"* and *"challenging".* One of the participants commented, *"There is one bit of me that reacts to this (physical sculpture) in a sense that this is a very hackneyed and conventional thing. But what I see on the screen makes me imagine things at a new level."* (Female, 60-70 years)

Unlike participants with dementia, these participants showed curiosity to see the physical sculptures more than the digital ones. The reason, which was distinctly obvious in the interview, was they associated their knowledge of practice to what they were

seeing in the displayed sculpture. The form, material and size were taken into account; as one participant commented, *"Its latex maybe. I know this is rubber, I know the process. It is synthetic; I think if it was stone and large, I think it would be very effective. Perhaps this could be a maquette for something bigger."* (Female, 71-80 years)

Similar to participants with dementia, the control group participants who did not have dementia commented more on the forms. Their comments were largely on the subject the sculpture represented. For the digital sculptures, they commented on the simplicity of some of the sculptures and were observant of the details on them. One participant pointed out a broken finger and another not having a flat bottom to make the sculpture stand properly when the physical sculpture was handled. They mentioned some artists' names in the conversation whose works they related to the displayed sculptures, the way participants with dementia did. Besides Giacommeti, which both groups had mentioned, names and works of contemporary artists such as Tony Cragg, Claes Oldenburg, Rachel Whiteread and Joseph Beuys were noted.

During conversations, control group participants unlike participants with dementia, gave less emphasis to the material of the sculptures on display. They identified the texture of the materials of all sculptures easily without touching and compared the textures of physical and digital sculptures. An example is the comment on the sculpture made of rope (Figure 13a):

> *"The digital one, even though you can see it is rope, it looks softer. This one (physical) is for touching and holding. I think they are both different really. Because for the digital one even though you know it is string or it is rope, it has soft feeling to it. But when you hold it, it is not. It is rough. It is prickly and it is not soft at all. I think you can play with textures digitally but in real life you cannot make modifications."* (Female, 71-80 years)

Another interesting finding was that although these participants pointed out the use of colour in the sculptures, none of the participants with dementia mentioned this. One participant's reaction to seeing a red sculpture was, *"Colour has ethnic connotation and is very dominant. It changes the meaning of the work as if something is coming out"* (Female, 71-80 years). Another participant commented on the colour of the rope. The reason could be the association of the traditional materials such as wood, metal, etc. are taken for granted and the colours obviously link with the sculptures they are made of. Although the sculptures had some colour on the surface, perhaps the participants with dementia may have perceived this differently, or these sculptures lacked contrast and did not stand out for them to notice.

In the interviews, control group participants also gave emphasis to the aspect of touch. One participant said, *"Smooth polished wood is one of the most pleasurable things to*

hold" (Female, 60-70 years). Another participant liked the tactile quality of sculpture compared to paintings and she said, *"I think that all sculptures should be touched. It is part of the instinct, is not it, to touch things. It is very important and I like what I am doing here."* (Female, 71-80 years)

There was a similarity between the two groups regarding their preference of representational and non-representational forms. As found before with the participants with dementia, the control group participants also preferred abstract form of sculptures. However, even though two of the participants were figurative artists, one of the participants gave the reason for her preference, *"Abstract is more challenging, you have to plan it with your knowledge to look right. Maybe something within a shape or form with overlapping boundaries of real and the imagined. It is up to you to how far you take your imagination without realising how far you are from reality."* (Female, 60-70 years) Another commented, *"I think it is the way a work of art is interpreted, there is always a hidden meaning which one can find out. It is like a puzzle and there is no right answer."* (Female, 71-80 years)

The overall emotional response of the sessions was positive; this group selected *"curious"*, and *"happy"* before the session from the emotion chart. After the session, they all selected *"happy"*. The positive emotions experienced after the session by both groups indicate that those who had a background in art could associate well with what they had enjoyed doing before the session. Their previous art involvement came naturally and it was their choice to get creative pleasure from their art practice.

3.4 Summary

The main aim of the preliminary study was to investigate the perception of physical and digital sculpture by people with dementia in order to explore their potential for creative expression and to engage them later in the process of sculpture making. However, the possibility of their having visuo-perceptual difficulties can sometimes affect their experience of viewing and appreciating a three-dimensional form. To address the three questions based on this preliminary study, a selection of physical and digital sculptures were put on display for the seven participants involved in this study. Viewing and handling of physical sculptures involved the participants through tactile engagement which invoked a different perception from the digital sculptures seen on an Android tablet. The process of showing both types of sculptures was found very effective in evaluating how people with dementia perceive traditional and digital methods used in making sculpture.

Individual likes and dislikes of the participants became visible which depended on their memory of previous knowledge and their emotional state during the sessions. While viewing the physical sculptures, participants freely expressed their personal preferences

of the sculptural form and material used. Although digitally created sculptures being new and unfamiliar were intriguing and evoked curiosity, their personal preferences of material and form did not alter. The abstract forms were more stimulating in comparison to representational sculptures and made the participants interpret their own meaning behind the creations. The few negative comments that arose in their conversations were due to their age-related inhibition of having less knowledge of digital technology. The emotional responses before and after seeing the sculptures varied with each participant and how they felt at that moment. It was noticeable that interaction with both types of sculptures had a positive impact.

Findings from this study confirmed the acceptance of the use of digital technology to make sculptural forms. It was noteworthy that none of participants discarded the sculptures shown on the Android tablet. The analysis of perception, affected by cognition, was necessary to establish their interest in the traditional and digital methods and to explore their creative potential. The comparative study between participants with dementia who were artists and participants who were healthy adult artists indicated that the visual, cognitive and perceptual difficulties caused the former participants delay in responding and not being able to articulate verbally. The control group of artists spent comparatively more time discussing details of each sculpture and pointed out sensation of touch and the aspect of colour.

The sensory and physical involvement in the traditional methods of sculpture-making and the scope for further experimentation in creative pursuits using digital methods and new technological processes are contributory factors to engage people with dementia in the artistic process. However, to interact effectively with people with dementia it is essential to consider their cognitive decline and be aware of their receptivity. An appropriate methodology focusing on the process of co-creation using digital tools can be effectively developed building on the knowledge and experience of people with dementia. A collaborative environment may support creativity and help it to flourish with encouragement. Frequent interactions with art may provide creative awareness, which in turn will lead to their better understanding and appreciation of art.

Chapter 4: Main study - Exploring creative potential of people with dementia

This chapter describes the methodology undertaken for the main study, data collection and analysis. It focuses on the working process and ways of making sculptures using physical materials and digital tools by people with dementia. In the preliminary study, it was found that viewing displays of three-dimensional forms initiated an interest in understanding the process of either physical or digital sculpture creation. Therefore, the main study was developed as a systematic experimental research on sculpture-making processes entirely based on self-initiated ideas of people with dementia with the support of a professional artist. The principle of co-creation underpins the following six different processes on which the methodology was based:

- Introduction to sculpture
- Making sculpture using clay
- Making sculpture using papier-mâché
- Making sculpture using 3Doodler pen
- Making virtual sculptures using Android tablet
- Making digital sculptures

4.1 Aims and objectives

The main aim of this study is to examine the processes of creating sculpture systematically, which may lead to new and valuable information regarding the creative potential of people with dementia. This research was an attempt to provide insights into various processes of making sculpture in group-settings and how the interactions reveal participants' intentions to create a form and subsequent inadvertent connection with the materials they used. It was designed as an original inquiry to address the main research question "How do people with dementia experience the process of making sculpture?" The artistic exploration of various methods of making sculpture raises the following sub questions:

- In what ways does the making of digital sculpture differ from the process of making sculpture using traditional medium?
- How does the process of co-creating sculpture with people with dementia influence the artistic practice of the professional artist involved?

In the methodology, the sculpting processes introduced to the participants were aimed at providing variation in the involvement of the physical activity of making sculpture, and acting as stimulant considering their stage of dementia. The purpose of the research is to identify key features of each method that would enable participants' creativity and promote maximum engagement with activities related to sculpture. The framework for the creative process of sculpture-making took into account co-creativity in this research,

the intention being presentation of the outcomes to viewers in an exhibition of all the created works.

The aforementioned aims raise the following core objectives:

1. To establish the level of understanding of sculpture by people with dementia
2. To evaluate their creative potential through the act of creating sculpture in group settings
3. To identify any differences in their development of ideas by involving them in the process of creation using both traditional and digital methods
4. To identify the areas where the co-creation activity may have an impact on their artistic endeavours
5. To evaluate the impact of such interactions on the artist's own professional work
6. To investigate the effects on viewers of sculptures created by people with dementia

Findings from qualitative analysis in this main study were published in the peer reviewed journal - *Dementia: The International Journal of Social Research and Practice* (Chauhan 2018).

4.2 Methodology

To address the research questions of this study and critically reflect on various methods of making sculptures, a methodological framework was developed. The main intention was to introduce a variety of processes, which were achievable but also at the same time challenging for those involved. The methodology was designed to enhance active interaction with people with dementia in group-environments, providing motivation to the participants and also the creative input for the artist involved in this research project.

Co-creation methodology

The main study worked on the principle of co-creation. Co-creation, as the term denotes, means jointly creating something. Similar terms include co-production, co-construction or co-design covering multiple disciplines such as visual art and design, performance, HCI, marketing or business. These terms are often used in collective, collaborative and participatory endeavours. The value of participatory engagement and working together depends entirely on the trust, respect, collaboration, communication and meaningful exchanges of the people involved. It could be in a group environment or on a one-to-one basis. While describing co-creativity Zeilig et al said, "it is characterised by a number of key features including centrally: a focus on shared process, the absence of a single author or outcome (and instead the idea of shared ownership), inclusivity, reciprocity and relationality". (Zeilig, West and Williams 2018, 138)

Zeilig et al reviewed the participative arts for people with dementia, which included singing and music groups, art groups: drawing and painting, dance projects, theatre and

storytelling, poetry and writing and the role of museums and art galleries. They shortlisted the following benefits of working together: "aiding communication; encouraging residual creative abilities; promoting new learning; enhancing cognitive function; increasing confidence, self-esteem, and social participation; and generating a sense of freedom among other documented benefits" (Zeilig, Killick and Fox 2014).

The process of participatory video making is another interesting way to work together with people with dementia. Andrea Capstick along with her colleagues engaged ten participants who were under long-term care support in the UK. First stage in the co-construction of a short film involved selection of images pertaining to individual interests and next stage included putting these images in a sequence to make a film adding audio tracks as well (Capstick, et al. 2016). These stages required exploring and working together along with dialogue on shared interests. Despite their condition, all participants were able to complete their films with the technical and other relevant support of the team. The use of visual images made communication easier enhancing their verbal expressions. Their findings showed high level of well-being for some participants while they were engaged in making or watching their films. Furthermore, their active participation and self-expression had increased significantly, consequently reducing the level of disengagement during the sessions.

In another paper, Rodgers has described a research study undertaken in collaboration with Alzheimer's Scotland. One hundred and thirty people with dementia from different parts of Scotland participated in co-designing a new tartan (Rodgers 2015). The name of the project was *Disrupting Dementia* tartan co-design project. The participants had to design a tartan using six colours only, inclusive of purple. The first stage was acetate version of the pattern which then was transformed using ribbons. The final stage was creating a digital version with the help of a design tool available online for tartan design. During all the stages, participants were able to suggest or make changes. Their knowledge of skills involved in weaving to make tartans and designs available locally contributed to their selection of colours and patterns. The result indicated the participants' reconnection with their past and designs, which they recollected (Rodgers 2017). All but one acknowledged the benefits of participating in the project. Six notable benefits were outlined which included their sense of achievement and appreciation of working with a specialist. Rodgers found that the thought process involved and later the action of doing something contributed towards the co-design aspect. He emphasized how such projects help in their reconnecting with self-esteem, identity and dignity. It also helped them connect with their community giving them the feeling of social inclusion.

The question that arose in this research study was what skills, knowledge and qualities a professional artist requires to initiate co-creation of different sculpture-making

processes. The above-mentioned studies imply that co-creation could be one of the most intense ways to enable engagement of participants with dementia in the process of making sculpture. Therefore, in this research co-creation process was adopted which focused on the developmental phase of art, and centred on the process of collaboration, idea development and creativity between artist and participant. The process of co-creation has the capacity to influence the following:

- Skills, techniques and process of working
- Communication of ideas and intentions

The demonstration of skills and the techniques involved needed guidance for the participants to practise. Being an artist I could offer my expertise in both demonstrating the process and later in producing a sculpture. The sculpture-making processes used for the study had different approaches, which required professional support and technical skills. The main intention was to encourage participants to engage in the sculpting process by demonstrating what and how it could be achieved and also the pleasure that comes from creative efforts.

Co-creation brings together the participant as creator, myself as researcher and artist, their physical involvement and the sensory quality of the materials used. This research has initiated the possibility of examining how participants perceive the production of their sculptures and how far this affects a researcher in his/her own practice.

Recruitment process and planning of sessions

Before planning the sessions, ethics approval was obtained from the University's Faculty of Sciences Research Ethics Advisory Group for Human Participants as the research involved a vulnerable group with cognitive impairment. People with dementia have the same rights as others according to the Mental Capacity Act 2005 and it should not be assumed that they lack capacities to make their own decisions because of their condition. The main study was planned for a longer duration for which the Code of Practice section 30-33, discussed earlier in the preliminary study, was reconsidered. The ability to give informed consent by the participants was a requirement in order to establish that they understood and could retain the information being given to them regarding their participation. This was further confirmed by their ability to conduct day-to-day simple decisions, such as personal decisions of what to wear, what to eat, etc., as reported by their family members, carers or health professionals (St. Martin's Hospital, Canterbury) who were involved during the recruitment of the participants. Their informed consent was a pre-requisite and had to be renewed at the beginning of each session, so that if there were any changes in their condition which might make a difference to their decision-making capacity, then at any point they could withdraw from the study, or extra help from family members or carers could be sought.

The next stage involved recruitment of participants, which had to be carefully considered as the study was designed to take six months or longer. There were two important aspects: why someone would like to participate and what information prospective participants would need. Therefore, a procedure was followed for participant selection. Firstly, a colourful informative flyer was produced which included the title *Expressions through Sculpture* with a brief description of the sessions (Figure 15). The study was conducted at the Beaney House of Art and Knowledge, which is a museum, library and art gallery, based in Canterbury city centre in Kent. It was held from November 2015 to April 2016 on every alternate Friday for two hours, from 2 pm to 4 pm. The flyer contained information along with the contact details. A suitable photograph of hands of a person making a clay sculpture was included to make it more appealing to prospective participants.

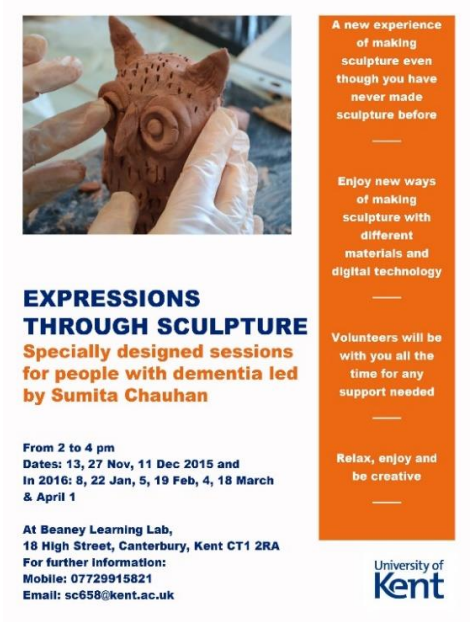


Figure 15: Flyer for recruiting participants

The process of recruiting participants started two months before the study commenced. To begin with, the flyers were first distributed among groups, which had regular interactions with people with dementia (e.g. Dementia Café in Whitstable, Age UK in Herne Bay and Canterbury, etc.), and to acquaintances who knew someone with dementia in their family and friend's circle. An electronic copy was sent to contacts in St. Martin's Hospital in Canterbury which provides specialist services to people with dementia and to their *Forget Me Nots* group who are actively working within Kent and Medway NHS and Social Care Partnership Trust (KMPT). Interested participants were shortlisted and were interviewed in the presence of their family members or carers. This was a very informal interview which was not recorded, the intention being to introduce the study and find out if participants were inclined to make a long-term commitment for the six-month study.

Initially it was decided to recruit a maximum of six participants for the research because of the earlier experience of working with a small sample size, which was found to be manageable to give individual attention within the two hours of the session. Selection was therefore done accordingly. However, before the start of the study, one of the participants withdrew and so recruitment of another participant had to be undertaken. Dr Alison Culverwell from St. Martin's Hospital in Canterbury suggested extra participants should be recruited, as there is always a possibility that someone may withdraw because of health or other reasons. Finally, seven participants with mild dementia were confirmed.

While the participants were being recruited the process of recruiting volunteers was also underway. Volunteers had a very important role to play in this study. Active support of compassionate volunteers was required to assist the participants in each session of the study. To recruit volunteers, people who had worked as volunteer or facilitator previously were contacted. Age and background was not a consideration and it did not matter if they had experience of any creative skill, however a DBS (Disclosure and Barring Service) check was required. Similar to the participants in this research, the volunteers also had to commit to being available on the days of the sessions for six months.

It was crucial for the volunteers to understand their roles and they were fully briefed at the time of the interview. In this study, their role was varied but the main task was to keep the participants company and look after their needs. Their help was required in completing the questionnaires before and after each session. During the sessions they were asked to assist the participants but to avoid interfering in their work process. Five volunteers were selected, two had training in art in the past and one was an ex-teacher who had done some artistic projects during her teaching days. All had previous experience of doing voluntary work and two had worked with people with dementia.

Taking into consideration that purposeful and meaningful art activities allow people to explore, experiment and express their ideas in visual and tangible forms, the planning of the sessions and rigorous implementation were carefully designed. It was important that the participants enjoyed the two-hour long sessions while engaging creatively with sculpture. These engagements included viewing sculptures as well as making sculptures. Participants were reminded a day before each session so that they could make arrangements to attend and at the end of the session they were reminded of the next one.

To document the activities of each session, an undergraduate digital media student from EDA was recruited for filming the sessions. Besides the video recording, audio was also recorded during the study. All the equipment and seating arrangements were planned beforehand for the participants' comfort and ease of access. The physical arrangements

in the room were equally important so that the activities could be carried out efficiently to make sure that there were no obstacles to the interaction. Questionnaires were carefully prepared for each session not only for the participants but also for the volunteers. Semi-structured questions were also prepared for the interviews to be undertaken during the sessions.

Introducing sculpture to participants

The actuality of a three dimensional sculptural form is not only the realisation through its form, but also the material representation of creative concepts, ideas and the techniques involved to produce such a form. The uniqueness of sculpture lies in the relationship it builds with the perceiver's mind and the surrounding environment. The first session of the study was the introduction to different types of sculptures. To address the first research question - "how do people with dementia experience making of sculpture?" a way had to be found to bring them together.

Studies show that a visit to an art gallery has potential to benefit people with dementia. Thus, art based activities in art gallery and museum environments were considered valuable. The Museum of Modern Art in New York was one of the art institutions to develop programmes with special emphasis on people with dementia and their carers, setting an example for other museums to follow which has been discussed earlier in Chapter 2. Based on the range of evidence that art gallery interventions and handling of artefacts have a positive impact on people with dementia, the first session of gallery visit and introduction to sculpture was planned. It was designed to give participants an overview of different materials, forms, methods and techniques used in making sculptures. The first day of the study was divided into two separate sessions. The first half was allocated to the gallery visit which was the *People and Places* section of the museum (Figure 16) and looking at sculptures in the exhibition space. The second half was dedicated to handling of artefacts from the museum collection in the *Learning Lab* at the Beaney House of Art and Knowledge in Canterbury. In the middle of the gallery, there is a display of a life size bust and next to it are some glass cabinets with displays of variety of sculptures in different materials and sizes. Twenty-one sculptures were shortlisted with different themes in a wide range of materials belonging to different periods to show and discuss during the session, keeping in mind that the selected pieces should appeal as well as generate interest. Information was gathered regarding each sculpture from the museum database, which included the title, artist's name, material used, size, year of the artwork and any additional description. Arrangements were made for the participants to have a comfortable tour and folding chairs were made available.

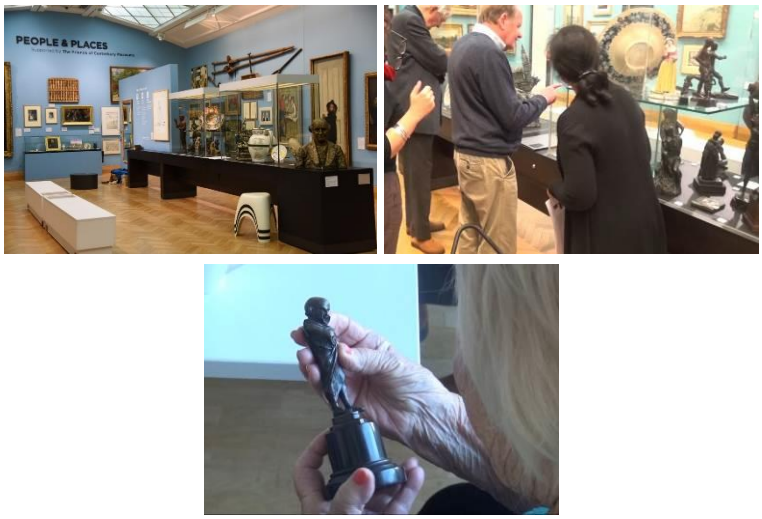


Figure 16: *People and Places* gallery, Beaney House of Art and Knowledge, Canterbury (left), Gallery visit (middle) and handling of artefacts (right)

Following the visit to the gallery, the participants took a short break after which the second half of the session of handling sculptures began. For this session, twelve physical sculptures from the museum collection and six from personal collection were selected, which included a wide variety of materials – marble, wood, papier-mâché, metal, rubber, etc. Size being the main consideration, small sized sculptures were chosen so that participants could hold these in their hands.

The participants filled questionnaires before and after the study. Besides completing the demographic details in the questionnaire, questions were structured in such a way so as to find out their preferences in terms of forms and materials they had seen and the reason for their choice. A separate questionnaire was prepared for volunteers, which focused on their overall experience of working with the participants.

Introducing participants to different processes of making sculpture

In this section of the chapter, different methods of making sculpture selected especially for the participants are explained in detail. The approach to engage people with dementia is a challenging, motivating and revealing strategy to encourage creative thinking and develop self-initiated ideas. The criterion for selection of processes of making sculpture was primarily to engage the participants with the act of creation.

There are different processes of making sculpture: modelling, carving, casting or construction. Unlike other methods, modelling permits addition and subtraction techniques unlike the other methods and the physical involvement is comparatively less strenuous. Hand modelling allows the use of tools and hands and provides a choice to construct a sculpture with either.

There is a wide range of available materials to make sculptures and what appeals to a sculptor is the ingenious handling of the material to form his/her idea. The variety of materials available to sculptors include both organic and inorganic materials: wood, clay, stone, glass, metal, etc. Each of these has its own qualities in terms of colour, texture, hardness and durability. Sculptures are also made with found objects and may include very unconventional materials like cassette tapes and chewing gums. Human blood, hair, nails and other natural materials such as leaves and human corpses are used as a medium of expression, such as the displays at the exhibition of Gunther von Hagens. Each material has different properties and influences the creator of the artwork in determining the sculptural form. The imaginative idea and expressiveness through material is what makes a sculpture unique.

Traditional methods

For the initial two processes in this study, the traditional approach to creating sculptural forms was adopted. The processes selected were used to transfer participants' creative ideas into something tangible, which would allow them to hold it in their hands. The main purpose of the activity was to get pleasure from the feeling of the material and also through learning new skills of how to use clay to make sculptures. The first process was clay modelling, followed by the method of using papier-mâché.

Clay was chosen as the first medium as it was the most familiar material to use. Moreover, clay work involves an intense and tactile experience of touching. Those who have never used clay to make sculptures may be willing to use it for the first time. The feel of clay associates with mud and soil. Claire Craig undertook studies with people with dementia gave detailed account of her participants who found clay extremely expressive and the "sensory journey" that clay leads to. She said the medium of clay gives shapes to people's thoughts as well as worries, intuitions and hopes (Craig 2012).

There are more accounts of the effectiveness of using clay for creative purposes that provides cognitive stimulation and encourages social interaction. The therapeutic qualities of clay work have been acknowledged; studies show that it has positive effects on general wellbeing already discussed in Chapter 2. The process of creating relief sculpture was introduced in the clay session. The first half hour was given to visiting the *Materials and Masters* gallery (Figure 17) and later for handling of artefacts and sculptures from the Museum collection and of my own creations. The gallery showcases a variety of displays of relief sculptures. Twelve relief sculptures were selected which were good examples to understand the features and the process of making, mostly marble pieces but there were a few other materials also such as terracotta. For the participants, eight relief sculptures made of different materials were selected from the Beaney Museum's collection for handling.

Figure 17: *Materials and Masters*, Beaney House of Art and Knowledge, Canterbury (top) Participant making clay relief sculpture (bottom left) & papier-mâché sculpture (bottom right)

For the second half of the session, air-drying clay was arranged and rolled as tiles of 10 X 10 inch squares on wooden square bases. Clay modelling tools were also required for each participant in case they wanted to use any of them. Printouts of visual references found online served as example of relief works as well as my own works were kept handy.

After the clay session, the next material used was papier-mâché. Both are wet materials with many similarities but also differences in properties and appearances. The composite material of papier-mâché is paper pieces or pulp and some adhesive is mixed or applied to bind them together. Papier-mâché is lumpy and comparatively tricky to achieve smoothness on the surface when wet. Once dried both materials have different properties. Both get hard but in terms of weight papier-mâché feels very light compared to clay. The two methods required different approaches in handling the material but the same questionnaire was used with the purpose of pointing out and comparing participants' attitude, preferences and opinion of both materials.

Dry papier-mâché was made available for the next session. The same clay modelling tools were offered to the participants. The session on papier-mâché was planned to start with an introduction of work by renowned British artists Henry Moore and Barbara Hepworth. A slide presentation, which included different varieties of their works and their preliminary sketches, was prepared. Print-outs were also collected of most of their works with the intention that participants could still see their works once the slide presentation was over.

For both processes, the act of creation and involvement in the process was considered as important as the final creation. Different types of visual incentives and references such as projection on screen, images on tablet screen and paper printouts were used to

engage the participants. The use of these two processes was to give participants a different approach to create sculptures, the first being relief sculpture and the second as freestanding sculptures. The emphasis was on making them aware of representational works and non-representational works, which they would be able to compare easily after seeing the gallery exhibits and the slide presentation of Henry Moore and Barbara Hepworth's work.

The use of 3Doodler pen

Tools used for the production of any artwork have potential to shape its making. There are ways of making sculptures depending on the materials. Some people prefer to use their fingers and directly work with the material. Others prefer to use tools through the process of addition and subtraction of materials. These tools act as extension of the fingers and facilitate the accomplishment of the finer details. However, some methods require tools to construct a sculpture in its entirety. 3D printing pen is one such tool, which is relatively new. It is very much like a hand held 3D printer but not attached to a computer system. The concept and use of a 3D pen has been around for some years now. It is associated with the invention of layer printing and different techniques involved in making a 3D object and computer-based technology. Scribbler 3D pen, Lix Smart Pen, 3dSimo Mini, Intelligent 3D Pen, 3Doodler, etc. are just a few products which are on the market.

The primary objective of using this non-traditional and unconventional method was to examine how participants responded to using this pen as a tool with the plastic as a creative material in comparison to clay and papier-mâché. This led to the more experimental approach of the following sessions, which used digital technology. Another question to address was how different would the co-creative approach of the artist using this method be compared to using traditional methods.

3D printing pens are of two types. The first type follows the principles of a heating element and extruder similar to the technology of Fused Deposition Modelling (FDM) of 3D printer whereby the nozzle of the pen heats up the plastic filament inserted inside the pen. The plastic comes out melted and soft. It can then be placed on any surface and three-dimensional formations can be created freehand. The other type of pen uses photopolymer that solidifies when it is exposed to UV light. Unlike the former, the ink cartridge has to be squeezed for the ink to come out from the nozzle. The ink changes its properties when exposed to the light from LED nodes at the tip.

Figure 18: 3Doodler pen (left), participants working with pen (middle, right)

For this study, 3Doodler Create Pen (Figure 18) was selected from the range of available 3D printing pens. It was developed by Peter Dilworth, Maxwell Bogue and Daniel Cowen of WobbleWorks, Inc. in the US and the first prototype was built in early 2012. The filaments are available in 65 plastic colours and in different materials - ABS, PLA and Flexy. All the accessories including filaments are easily available online, in case participants or their carers wanted to purchase it later after the sessions were over. Therefore, 3Doodler pens, pen stands, pads and different colour filaments were arranged for all participants. Special instructions had to be given for health and safety measures as the participants would be dealing with heated nozzles, therefore consent was sought and obtained before the session began. Volunteers were informed beforehand about the equipment and how to handle it.

The use of digital methods

For this study sculpture-making in virtual space, making digital files of physical sculptures and transforming participants' ideas digitally into physical forms were adopted. The main purpose of engaging with these digital methods was to investigate the ways in which participants envisaged their ideas into 3D forms. The use of digital technology has redefined art in new ways, which we experience on flat screens of computers and tablets extending to 3D projections, augmented reality, virtual reality, etc. Its use in production and presentation of art is considered a great tool for enabling the creative process and offering a multitude of possibilities (Paul 2015). It is now recognised and accepted worldwide as part of artistic practice.

Making a creation in virtual space and transforming the same into a physical form is a different approach from the previous methods selected for this study. The nature of creating a physical sculpture is restricted to its material used, while creating a sculpture using digital tools provides unlimited options.

The first attempt using digital method was the creation of virtual sculptures on a tablet. Touch screen tablet is a portable wireless device, which is easier to handle compared to a computer with keyboard and mouse. There are many manufacturers selling tablet computers and a wide range of software packages commonly known as "apps". The tablets vary in size, form, function and price and can run on different operating systems

such as Apple iOS, Google Android OS, and Microsoft Windows OS. Tablets usually have either resistive or capacitive touchscreens. The former allows finger and non-finger input and the latter allows multi-finger touch input.

The touch-enabled interface provides the users with not only a direct connection but also an interactive experience. There is evidence to suggest that touch screen tablet devices have been successfully adapted as creative and therapeutic interventions. Mihailidis et al carried out a research study involving art therapists and their clients who had dementia (Mihailidis, et al. 2010). They conducted a multinational survey, which included 133 art therapists. In their ethnographic analysis, they presented two categories – structural implications and design implications. Four structural implications identified were customisability, adaptivity, passivity and assessment. The design implications which were identified included touch, saving and reviewing work, tackling interfaces according to art therapist's involvement and feedback. Based on the above implications the research team developed three prototype ePAD devices, which is partly discussed in Chapter 2. The first prototype was a painting application, the second one was to create collage of multi-coloured objects and the third was a flipbook animation on blade tablet. These devices were primarily designed to help art therapists to facilitate participation and also for therapeutic interventions in creative activities. For the user, besides being creatively engaged it was also an opportunity to have independent involvement and obtain considerable satisfaction.

Tyack and Camic published a systematic review of touch screen interventions for people with dementia and an assessment of the impact on their general well-being (Tyack and Camic 2017). Their initial review included 457 papers, which they subsequently narrowed down to 16 papers with 14 interventions. These papers were shortlisted because of the designs and methodologies adopted. Findings show that if touchscreen apps are properly designed and developed, people with dementia can use them successfully and little training is required to use the screens. Other contributing factors depend on the interface, which should be simple, pleasing, and with proper instructions to follow easily. According to Tyack and Camic, one of the suggestions for future research is the possibility of exploring more art-based interventions and the effectiveness of touch-enabled devices integrated through quantitative and qualitative findings.

In another paper, Tyack et al investigated a wellbeing intervention with twelve pairs of people with dementia and their carers. This study suggests that viewing art on a touchscreen tablet can be beneficial and has shown its impact and improvement on cognitive, behavioural, emotional wellbeing of people with dementia and in the relationship with their carers (Tyack, et al. 2015).

Based on the findings of the above studies, the study session at the *Learning Lab* at the Beaney House of Art and Knowledge was designed to facilitate maximum engagement by using touch enabled Android tablets. The first part of the study was to introduce the participants to tablets, followed by viewing some sculptures as examples. This was mainly to get the participants accustomed to holding a tablet and using their fingers for input in order to have some kind of control on what they were viewing. A variety of 3D models of representational and non-representational 3D objects and sculptures created by me and other artists were downloaded to each tablet. The aim of the second part of the study was to engage participants in the process of creating virtual sculptures using an app. For this, available apps for Android tablets had to be evaluated, which are free to download so that participants or carers can make use of later on.

There are a number of apps for 3D model viewing and 3D modelling available on Google Play. Some of the available free download apps for viewing 3D models are HD Model Viewer by Duke Dev, 3D Model Viewers developed by Aaron Jacobs, Hedgefundapps and Jeffrey Blattman, Collada Viewer by Googolplex ltd. etc. HD Model Viewer and 3D Model Viewer by Jeffrey Blattman were selected on the basis that high polygon models could easily be downloaded and viewed. The basic tools - rotate, zoom in and out – also function smoothly.

3D modelling apps are plenty in Play Store, which makes it very difficult to decide which one to select. Most of the apps are full-featured 3D modelling programs, which can be used on any Android device. Some of the suitable apps are 3DC.io by 3D Creationist, Spacedraw by Scalisoft, Qubism by Jonathan Quinn, d3D Sculptor by Naticis and TrueSculpt by Fabrice Boyer with high review ratings. For this study, TrueSculpt and Qubism (Figure 19) were chosen, as the user interface of both apps are uncomplicated, which was the most important consideration. The designs are constant and capable of high responsivity. TrueSculpt provides a virtual clay ball and basic tools to draw, grab, flatten, paint and create symmetry. It is very easy to “undo” and “redo” while working and the file can be saved as .obj format. Users can load a previously saved file and work on it. Like Truesculpt, Quibism offers all these tools and some more. It has digital geometrical construction blocks called “qubes” which can be manoeuvred using the tools of rotate, move, stretch, add, etc. It uses .png, .json and .dae formats to save the files. An advantage for both apps is that these can work offline.

Figure 19: Android apps interface - Qubism (left) and Truesculpt (middle), participant making virtual sculpture using Android tablet (right)

Regardless of the background knowledge of the participants, the apps were selected on the basis that first and foremost they should be easy to operate. People with dementia are likely to have visual difficulties besides age-related vision problems. Therefore, the tools, which are to be used frequently, had to be within their field of vision. The level of enjoyability is crucial as it directly influences user engagement and retention. The main purpose of using an app is to explore the ways in which using a tablet impacts on the participant's creative potential.

Use of additive manufacturing technology

The creation of physical sculptures using 3D printing process was the second digital method adopted for the research. It was divided into two sections. The first was to develop self-initiated ideas of the participants and the next was to make 3D models of their ideas and then print the sculptures using a 3D printer. For the first section, participants worked on their own ideas of what they wanted to create and be seen as a sculpture. Volunteers and I encouraged them to communicate openly and also to draw, sketch or make physical models of their ideas. The second phase, which was the production of sculptures, was entirely researcher-led as the creation of virtual models and their subsequent use for printing needed knowledge of using software and digital tools.

The main purpose of engaging the participants with these digital methods of making sculpture was to investigate the way in which they visualise their ideas into 3D forms. A slide presentation introduced the participants to different kinds of digital sculptures – virtual and digitally created physical sculptures. The first few slides contained images of sculptures with different kinds of formations created by various artists, including my own works. Next, images of virtual models of six representational and non-representational sculptures were shown. Participants were shown the use of photogrammetry technology to create a 3D model out of multiple pictures of one sculpture and how a virtual model with polygon mesh can be created with the help of a software to stitch them together. The physical sculptures were kept ready for the participants to see and touch soon after the slide show of its virtual model. This was meant to enable them to have an idea of the connection between the virtual and the

physical models. This also gave them a break from looking at the projection screen for too long.

After the participants handled the sculptures, four short online videos were shown. These were time-lapse videos of the formation of an antelope and a human head by using additive manufacturing technology and formation of a bust and a relief block by using subtractive manufacturing technology. During the presentation, the differences between the virtual and physical were pointed out every time to make the participants familiar with the terminology. Questionnaires were prepared to get maximum response from the participants regarding specific observations they made during the slide presentation.

Besides making sketches, drawings or maquettes of the ideas, photogrammetry technology was also made available, which was possible with a digital camera. This method was available to the participants in case they wanted to create another sculpture from an existing physical object.

To produce the physical sculptures, Cube 3D printer (Figure 20) and different colour filaments were used according to participants' choice of colour. Cube 3D is a desktop printer manufactured by 3D Systems in the US. It prints either over Wi-Fi using Cube Print App or by transferring files using USB stick. It is a dual jet printer and material used can be either recyclable ABS plastic or PLA plastic. The maximum size that can be printed is 6x6x6 inches. Creating a physical model in a bigger size is also possible. It can be achieved by printing smaller sections of the model keeping in mind the build size of the printer and later assembling the parts together.

Figure 20: Cube 3D Printer (left), participant developing ideas for digital sculptures (middle), 3D printed sculpture (right)

The printer was used at EDA and the process of 3D printing of all the sculptures was video recorded. This was mainly to show participants the complete construction of their sculptures as a time-lapse video of the whole process in a few minutes compared to hours of its production. It also demonstrated the process of printing effectively and did not require too much attention and concentration.

4.3 Findings and discussion

This study generated a significant amount of data. One of the methods used was a questionnaire which was distributed to each participant after their consent to participate in the study had been received. To support the data obtained from the questionnaires, similar questions were asked in the interviews to make sure that the correct information was recorded and to reconfirm the details. The volunteers completed separate questionnaires after each session. The data captured included video recordings of the participants making sculptures and multiple audio interviews. Observations noted during the sessions also became part of the data.

Seven people with mild dementia, three female and four male, gave informed consent to participate in this study. The age was grouped in five categories, 60-70 years, 71-80 years, 81-90 years, 91-100 years and over 100 years. The wide range was provided so that participants did not have to be very specific, as they might have found it difficult to calculate their age at the time of the study. All the participants were British (White) residing in UK and living in different parts of Kent – Bridge, Canterbury, Dover, Faversham, Tankerton and Whitstable. Majority of them lived with their family except two female participants - one lived on her own and the other in a residential home. Family members provided information about their condition as most of them were unaware or found it difficult to explain. For the purpose of anonymizing the participants' identities, pseudonyms have been used. Table 3 shows the age, gender and their condition.

Participant pseudonym	Age group	Gender	Type of dementia
Amanda	91-100	Female	Alzheimer's disease
David	81-90	Male	Mixed dementia
Gary	71-80	Male	Mixed dementia
Jane	81-90	Female	Fronto-temporal dementia
Gloria	81-90	Female	Alzheimer's disease
Nelson	71-80	Male	Fronto-temporal dementia
Oscar	71-80	Male	Alzheimer's disease

Table 3: Participants' age, gender and types of dementia

The personalities of the selected participants from varied backgrounds were unique with their individuality, viewpoints and life experiences. In the case of David who was an ex-surgeon, he was conscious of not using his hands like before as he suffered from severe arthritis besides his condition of dementia. It restricted his movements to the extent that he had to walk with a stick and his wife always accompanied him. His keenness to engage in creative activities was mainly to exercise his control of hands. Furthermore, he felt creativity would engage him mentally too. He had a good sense of humour, which

was a positive trait to deal with his present stage of dementia and he often joked about his shortcomings and forgetfulness.

Jane on the other hand preferred to live independently by carrying on most of her activities as she was doing before her diagnosis. Her family and friends were around for her to reach them if she required any help. She was always well-dressed and liked spending time in her house in France. She felt she was much stronger than anyone of her age and would not allow dementia to take over her life. She was eager to learn new things which she thought would keep her brain working. She was very chatty and mentioned about her interest in finding ways to help herself to deal with dementia.

A similar case was that of Gloria who was a homemaker all her life. After her diagnosis of dementia, she continued to be physically active and independent as before with occasional help from her children. She still did most of her usual household chores and took her dog out for a walk so that she could meet others who were regular dog walkers and now her only friends. According to her daughter, at the onset of her mother's dementia she lost her interest in doing needlework which she had done all her life. Gloria's main worries were regarding her future when she would completely lose her abilities and independence and have to depend on her children.

Nelson had a very quiet demeanour. However, he always had a smile on his face. According to his wife, since his diagnosis he became withdrawn and much quieter than before. At home, sometimes he would not do anything and sit quietly until he was told to do something. He could not take any initiative to do any work himself. His wife made extra efforts to make him more engaged in local community activities and travelling abroad. He preferred to be in the company of his small grandchildren rather than adults in the family. He was otherwise a healthy man and did not have any other health problems.

Gary was the tallest among the participants. With the support of his wife, he managed to carry on with his life and shared their daily chores which included taking out their dogs for walks as he was very fond of them. He would patiently listen while someone was talking but when he started talking, he did not like anyone to interrupt him. He had a tendency to question about anything with which he disagreed and did not accept. After his diagnosis, he became more inquisitive when asked to do something. He sometimes talked to himself when no one was around.

Amanda was the oldest in the group and very quiet like John. She needed someone to give her a hand while walking as she was not steady on her feet. She had hearing problem and without her hearing aid, she was more withdrawn. She preferred to look and observe others around her while sitting. She was very calm and composed and never got agitated or showed any irritability when she was unable to do things herself or remember. She

patiently waited for her daughter or caretaker to help or assist without moving from her place. In her living room in the residential care home, her collection of sculptures and paintings of her visits abroad were displayed. She remembered stories linked with each artwork and if asked she would explain the works and what she liked about them. The loss of one of her daughters left a deep emotional impact which she found difficult to overcome.

Oscar preferred to talk less and let his wife do most of the talking and he would respond by nodding or shaking his head. He was docile, reticent and cautious while talking. His main worry was his wife's health and his own future without her as she had terminal illness. He relied on her for most of their decisions in life after his diagnosis. At home, he got agitated easily if he did not remember anything or could not find things in their proper place. His fondness for music still continued since his days of playing organ, and he now played a keyboard which has a special place in his living room.

Participants' interest in art and prior knowledge

It was considered important to gather information about participants' art background and interest in art. Therefore, one of the queries in the questionnaire made available at the beginning of the session was to state which was the best phrase to describe their involvement - as an artist, an educator in arts or being in an art profession or in any other way. In the first session, most participants opted for "interested in arts" except Jane who mentioned previous involvement with art activities and having had basic training in art. In the following session, Gloria ticked "other" and wrote "embroidery" and Gary wrote, "I have never drawn before". Gary in the next session wrote, "interested to learn. Better late than never!" This shows the changing approach to the sessions and their ability to relate to creative work done before. In the later sessions another participant, Oscar wrote, "Teacher in modern foreign languages and musician".

It was found that in the twelve sessions, most participants opted for "interested in arts" and there was no negative statement. Some participants chose that option and also mentioned their involvement in the sessions in this study. For example they wrote - "only in previous session", "in other sessions here" or "previous session". The first evidence was in the questionnaire of the third session by one participant, Oscar. In the following session two participants, Amanda and Nelson mentioned it. Figure 21 shows the distribution of the participants who mentioned their involvement in making sculpture in previous sessions.

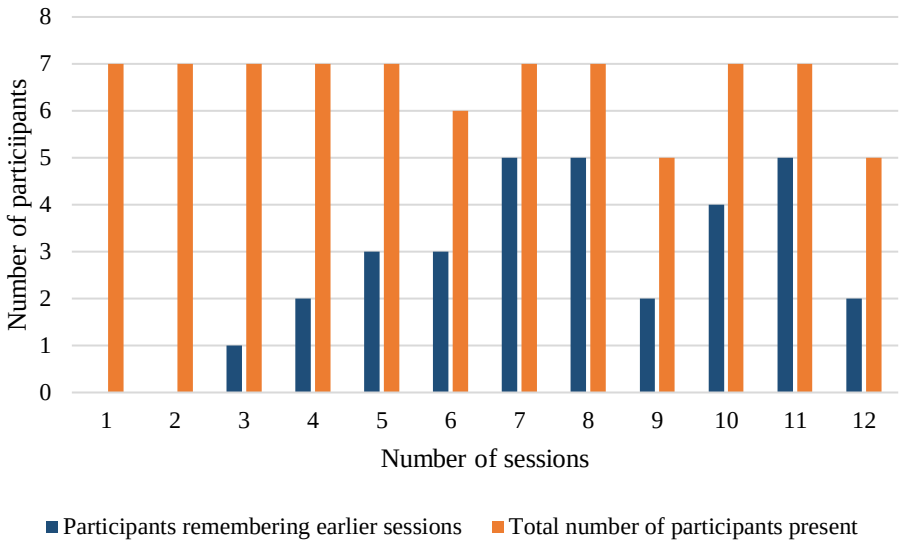


Figure 21: Distribution of participants remembering art involvement in previous sessions

Next was a dichotomous question focused on participants' previous involvement with sculpture-making with an option to specify the kind of sculpture and material used in case the answer was in the affirmative. Only one participant, Jane had previous basic training and worked with clay and wood. This indicates creative engagements in the past could initiate further involvement. Another participant, Amanda also gave an affirmative answer and stated making sculptures using tissue papers and paper cups at the AgeUK Centre, run by the largest UK charity for older people. She had been going regularly to the center after she was diagnosed with dementia.This showed that recent engagements in making three-dimensional forms using some specific materials could be retained in the memory. The remaining participants had not created any sculpture previously.

Experience of each session

The first session of a gallery visit followed by handling of artefacts broadly served the purpose of giving the participants some familiarity with the terms, materials and techniques covered in the sessions. The close proximity of participants to the exhibits enabled better viewing and more attention to detail in recognizing the forms. While handling the sculptures, everyone pointed out the materials used, three participants, Amanda, Gary and Gloria, especially noted the heaviness of the metal sculptures. It was found that compared to the visit to the gallery all participants engaged in conversation more while handling the sculptures. It confirms evidence from studies on museum object handling that tactile interaction with objects acts as a stimulant, discussed in Chapter 2.

The video recording of the gallery visit showed there were two exhibits in the gallery of utmost curiosity. All the participants commented on the two sculptures in the interviews and four mentioned them in the questionnaire after the session was over. One of these

sculptures was the life-size bust of Dr Hewlett Johnson (Figure 22), also known as *The Red Dean* in bronze. This was the first realistic sculpture which was shown and five of the participants had known about Dr Hewlett Johnson as a person. Two participants talked about his personality. One of them, Jane, commented, *"Because I don't know whether he was member of the communist party, certainly very Left Wing. He was extremely mild, gentle, lovely man, very tall."* The other one, Gloria said, *"He had such understanding, you can tell from his eyes"*, pointing to his eyes.

The other five participants in the conversations showed more awareness of the physical sculpture. Two participants commented on the features of the portrait, Amanda said, *"Yes, it is a gentle face"* and Nelson said *"He has got a smiling face"*. Gary's comment was, *"Guarded intellect. I remember the name but cannot remember what he was"*. This shows how each participant tried to associate with one sculpture in their own individual way. One participant, Gloria, went around the sculpture and said, *"He has lovely face, is not it? From the profile, you cannot see that"*. This indicates their embedded knowledge of looking at sculpture from various angles. This sculpture made the participants very much at ease as it instantly associated them with the artwork by identifying either the person or the physical features of the portrait.

Figure 22: *The Red Dean* in bronze (left) and Cochiti Pueblo earthenware figure (right)

The other sculpture, which caught everyone's attention, was a 19th Century Cochiti Pueblo earthenware figure (Figure 22). Cochiti pottery generally has a very unique whimsical characteristic and is known for figurative representations ranging from human to animal forms. The exhibit in the gallery was a black and cream colour standing human figure with hands on hip, wearing a waistcoat, with his head up and an unusual shape of open mouth. The famous Cochita potter Seferina Sevenna possibly made this.

All participants mentioned they found the form very different and four of them found it very modern. One participant, Gloria, said, *"It is different but it is lovely"*. Another participant was curious to know whether it was a container or not because of the wide opened mouth of the tilted head. Gary showed keen interest and he asked, *"This is the one I want to know all about"*. It was evident from the video and audio recordings that participants conversed more in front of this exhibit than others. They compared this sculpture with other works they had seen in the gallery and found it very different in structure, material and colour.

After the visit to the gallery, participants were handed sixteen sculptures, which included artefacts from the Museum's collection, and modern sculptures from my personal collection. This second half of the session had a different approach as each participant could touch and handle the sculptures individually. The video recordings showed they were interested to see the sculptures and holding them in their hands gave them the freedom to touch or move them the way they wanted. Their comments focused on the forms and the tactility of the materials as the sculptures were passed around the table. All of them identified the materials they were holding in their hands - wood, marble, metal, rubber, plaster of Paris and papier-mâché.

The Egyptian canopic jar lid (Figure 23) was liked by all participants. The main reason they gave was the feel of the wooden surface and the other reason was its fine chiselled features of the Egyptian head. Comments such as "I like the hair, it's lovely to touch" confirms their observations. Being a representational work it was easily identifiable. Everyone identified it as Egyptian except one participant who thought it was Queen Victoria. Gloria said, *"Is it Queen Victoria? It is wood, very heavy. It looks like Queen Victoria, doesn't look Sphinx like."*

Figure 23: Egyptian canopic jar lid

Another work that held their interest was a papier-mâché sculpture, created by me, called *Swerve* (Figure 13c). Amanda was the first participant who held the work asked, *"What was the inspiration?"* This was a non-representational sculpture, which was found to raise a lot of curiosity among the participants as it passed around the table. Firstly, the

participants tried to interpret what the form looked like. Secondly, the participants were confused which way the sculpture would stand. In comparison, a representational work is very easy to position or place on a surface. This sculpture put up a challenge for them to arrive at a conclusion. Oscar held it horizontally and pointed at everyone as if it was a gun.

After the interactions with sculpture and at the end of the first session, participants were asked which activity they liked most. Results show that 43% of participants liked all the activities of the session, which included talking about sculptures, viewing and handling of artefacts and being involved in conversations. 29% of participants liked looking at all the displayed sculptures. Lastly, 14% of the participants enjoyed handling and an equal percentage of participants liked to talk and discuss while viewing and handling. Afterwards, they were asked what sculpture was according to them. They all had a different interpretation, three commented with adjectives *"interesting"* (Amanda and Gary) and *"artistic"* (Oscar). David simply said, *"Sculpture is three-dimensional"*. Two participants, Gloria and Oscar commented on the way it is seen, *"A piece you can see from all angles"* and *"You can view them from lots of angles, unlike painting"*. Interestingly Jane looked beyond the form and said, *"A way of preserving something about a person or an idea"*.

The focus of the second session was to introduce the participants to relief sculpture, its sculptural technique and to engage them in the process of making it using clay. After their visit to *Materials and Masters* gallery, they returned to the *Learning Lab* to see more relief sculptures which they could touch and handle. The purpose of the visit and handling of sculptures was mainly to stimulate further discussions. From the video recordings, it was found that all participants engaged in conversation while they were holding the relief sculptures compared to the visit to the gallery. The gallery visit seemed more formal and few had visual difficulty looking at sculptures inside the glass cabinet and therefore less engaging, with the exception of one display which showed a marked difference in their response to it when they were allowed to touch the tactile interpretation of the oil painting *Virgin and Child Resting in an Imaginary Landscape* by Bernaert van Orley (Figure 24). The advantage of including this particular work was to keep in mind the fact that the participants could touch and feel the work and compare it with the painting hung on the wall. It is a good example to show the difference between a two dimensional painting and a three dimensional sculpture. All participants enjoyed touching the relief work made by Loz Simpson, especially the folds of the draped clothing of the "Virgin", and the facial features and hands of her and the child.

Figure 24: Tactile interpretation of *Virgin and Child*

The activity of participants' touching and handling the sculptures after their visit to the gallery was very appropriate. The close proximity to the exhibits provided them better viewing and allowed more attention to detail. Their observations focused on the recognition of the sculptural forms and then on the sensation of the materials. The participants also pointed out weight of the sculpture later. Among all the exhibits two were appreciated by everyone; a replica of a 16th century helmet made by Elkington, and a 16th century long wooden relief showing Eve. Besides the workmanship, the difference in the tactile quality of the materials and the contrast between the high and low relief was evident and easy for them to notice.

After the visit participants created relief sculptures in clay. The reasons behind their choice of creations reflected their thinking process at the time of the session. Four participants, David, Jane, Gloria and Nelson, selected something from their life - a nautical theme denoting fish, an owl in a home in France, a daisy in the garden and the cats at home respectively. The pattern of waves in a picture intrigued Oscar so much that he created a frog in a pond. Another participant, Amanda, made her sculpture showing "mother bird and baby bird" which had a very distinctive narrative quality. Gary was unsure of what he wanted to create and picked up a theme from the forthcoming Christmas season spending more time compared to others to get the impression of holly in clay. He was the only one to construct an idea from his surroundings and not from his personal life.

Only one participant had previous experience of working with clay. One of the participants, Oscar, wanted to wear gloves as he considered wet clay very "messy" which might spoil his clothes. Others preferred touching the clay with their hands and sculpting the forms using clay tools. Only Gloria preferred to use her hands and fingers to make sculpture instead of using clay tools.

After the session was over, participants were asked to briefly describe relief sculpture. Four participants, Gary, Jane, Gloria and Oscar, defined it in terms of its physical presence: "Decorative", "Another type of sculpture. Viewed from one side only. Flat back", "It is like 3D coming out of 2D" and "Raised surface". Two participants, David

and Nelson, described it as “Interesting”. Only Amanda mentioned her work *Mother bird, baby bird* as an example of a relief sculpture.

For the freestanding papier-mâché sculptures, observation was the key factor, as participants had to keep an eye on the original source of either Henry Moore or Barbara Hepworth’s sculptures to create their own interpretation. Four participants, David, Jane, Gloria and Nelson, selected Henry Moore’s sculptures for the elongated monumental formation and reclining figure. Amanda and Gary selected Barbara Hepworth for her lyrical forms and use of string and Oscar was undecided and chose both for organic abstraction. Four participants, Amanda, Gary, Gloria and Oscar, made drawings first, others started building sculptures with the papier-mâché straightaway. Jane had used the material before.

From the conversations around the table, it was obvious participants realised the difference in the tactile sensations, their physical involvements and ways of processing ideas. Both materials were wet but they found clay smoother. Two participants, Amanda and Oscar, asked for gloves not enjoying the feel of papier-mâché compared to clay. For the relief sculptures, the participants were provided with a square tile of clay to add or subtract layers. However, for the freestanding sculptures, they had to build from the base upwards. Video recording showed the participants physically more engaged in this process. They had to either move sculpture or physically move themselves to look around their creation and make their judgements of the height and width of the sculpture.

An interesting finding of the session of using the 3Doodler pen was that all participants took it as a challenge and no one refused to try. Two participants, Gary and Oscar, found it difficult to operate at the beginning, probably due to their inability to manoeuvre such a small electrically operated tool. Everyone managed to create their sculptures on different themes. It was evident that by this time patterns were becoming visible in depicting personalities of participants. Gary picked up something closely associated with his present life similar to his relief sculpture, and created a sculpture of two dogs from a picture of his pets. Amanda and David continued to work on the themes of mother and child and nautical scenes respectively.

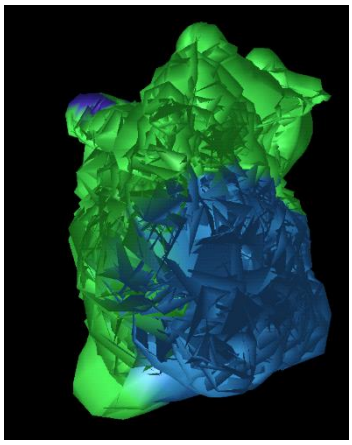
Mother and child was created by Amanda who also created sculptures in clay and papier-mâché on the same theme. David and Jane worked on the themes of fish and bird, which was also similar to their themes in previous sessions. Nelson created network of lines and Oscar a replica of his own hands. Both these works represented the participant’s response to the fragile physical quality of the fine threads of plastic material, which came out of the nozzle of 3doodler pen. The association of participants’ creative ideas with the previous sessions indicates the development of their thinking and remembering through repetition. In all the sessions, the pattern of self-initiated ideas through

communication was repeated. These communications increasingly shaped the visual and the sculptural forms establishing and conveying the concepts and intentions of the participants.

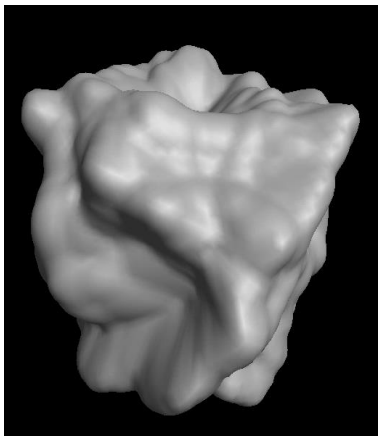
The next sessions on creation of virtual sculptures involved handling of Android tablet. None of the participants had ever used it except Gary and Jane who remembered seeing pictures or videos on a tablet with their family members. Participants were encouraged to work independently on the tablet and first familiarise themselves with the tools and techniques. Even though they did not show much eagerness in the beginning, it generated an overall curiosity in the group, which led the participants to try it. In the interviews, participants pointed out the change in their method of working which no more included drawing on a paper to develop ideas, instead they were working directly on the tablet screen. Jane said, *"It is like being back in the 3rd form!"* by saying this, she meant she had to learn and remember. David's comment was very similar to the previous one and he said, *"I enjoyed the exercise, but found it hard to remember how to do it."* The participants had to learn and remember which was very challenging. Gloria said, *"It is not difficult. Just a question of getting into habit of doing it."*

In the interviews, all the participants mentioned the use of anything related to computer technology did not come easily at their age. Jane said, "*Well, I am a technology-phobic. Well, it is very different. If you were brought up with it, like my grandchildren I mean, they use it too much*." Gloria commented, *"My son does things on computers, that's his job. I will look silly if I ask him to teach me anything. He would definitely say you are too old, Mom."* Three participants, Amanda, Nelson and Oscar, said they would not have time to master anything as the technology moves very fast, becomes difficult and complicated.

The use of *undo* command was confusing as the participants found it difficult to decide whether the created sculpture was ready or not. To make it easier for them, they were asked to interpret the abstract creations and provide a title. Figure 25 shows examples of virtual sculptures created and the titles. Although the process was lengthy and required help of volunteers to write down their statements it provided them with a sense of direction to move forward.



Title: *Stained Glass*
Statement: "*I wanted to develop different colours within the sculpture when the light shone through it. Reminded me of stained glass*." (Jane)



Title: *Torso*
Statement: "*Shoulder and waist, a man's torso. I like the unevenness. I did not mean to do it but it looks better this way*." (David)

Figure 25: Virtual sculpture with title and statement

The virtual and digital processes raised more questions compared to previous sessions. The challenge of using digital tools that were unfamiliar for the first time was a reason for them to get involved. On the one hand some participants said it is "not for our age" (Gloria),, "over the top" (Nelson) and "can easily live without it" (Oscar) and on the other hand some observed that they were "too mechanical" (David), "modern" (Amanda) and "thought provoking" (Jane). For 3D printed creations, participants drew their ideas on paper, Amanda and Jane made maquettes and Gloria followed *photogrammetric method* and took digital pictures. Participants approved the virtual models of their ideas created by the artist and selected colours of their choice to print. Four participants, Amanda, Jane, Nelson and Oscar, after seeing the physical creations showed curiosity in the process and two were critical saying "the fingers do not look like the real one" (Gloria) and "I should have drawn more waves. Looks a bit empty" (David). Gary reiterated his views of using hands and brains and not computers for creations in each interview.

The interactions during the sessions mentioned above fall under different levels. First and foremost, the creative interactions generated new ideas and simultaneously the group setting helped in providing multiple perspectives of the participants' ideas, deepening and widening their thought processes in ways different from their habitual manner of thinking. Their efforts to express individual feelings and intangible thoughts into creative forms were the outcome of this interaction.

The participants were socially interacting with the other group members by openly communicating their opinions and ideas. They indirectly became part of any conversation even when they were not engaged. The social interaction facilitated the participants to communicate and connect with others, raising their interest to learn more.

Also, in many ways it made the participants actively notice things around them and to keep learning. For some participants, the creative exchanges acted as a means to tell their story or share incidents from their lives. Moreover, others in the group could see the participant in a new light and get to know more about the person. This gave participants a feeling of being recognised, heard and valued.

The interactions with various sculpture making processes helped in developing effective engagements with different materials. The way they acted and reacted with each process of making sculpture affected the quality of their learning experience and the creative outcome. Engaging in the process of viewing, handling and making sculpture involved extended efforts to articulate their opinions which most of the participants never experienced before. It was evident as mentioned before in this chapter, that the traditional methods were comparatively more easy to learn and practice than the digital methods. According to the participants, as expressed in their interviews, the kinaesthetic sensation and tactility were the dominant features while in digital sculptures they were less.

Participants' interactions with the traditional methods were much more controlled as they were expecting the outcome to be in a physical form. However, when they were introduced to digital techniques of making sculptures they were completely unaware of the making process. The difference in the two methods - manual creation of a physical form and digital creation of a virtual form – influenced their interactions during the sessions, both at social and creative levels.

The significance of the interactions could be seen by the way of communication they adopted to represent their responses creatively. In the group setting, it was found that the participants' overall behaviour was very much influenced by the social interactions which led them to engage more effectively in their creative endeavours. While discussing around the table about their sculptures it was found that often they compared their creations with others, which indicated their being more observant of creative engagements in their surroundings. During the sessions on the digital techniques of making virtual sculptures, there was more communication and exchange of opinions in the group in comparison to earlier sessions. The traditional methods were agreeable while the digital methods were more argumentative, speculating on its acceptance as art. The differences of both methods could be seen in what has been learnt and understood and the way they shared their experience during the sessions and in the interviews. The interactions with sculpture which affected participants socially and creatively were as significant in this research as their sculptural outcomes.

Reminiscence of sessions by participants

Considering the variation of sensory and physical activities associated with each process, participants were asked which method they remembered before the start of a new process of making sculpture. The data was not collected as a memory exercise as there was the influence of some external factors; verbal prompts from volunteers or carers present during the session often reminded them of the work they had been doing. Participants found it easier to retrieve and remember information with visual cues. Therefore, they were asked at the beginning of the fourth, seventh and last sessions which sessions they remembered. Figure 26 shows that the participants retained the memory of their recent activities.

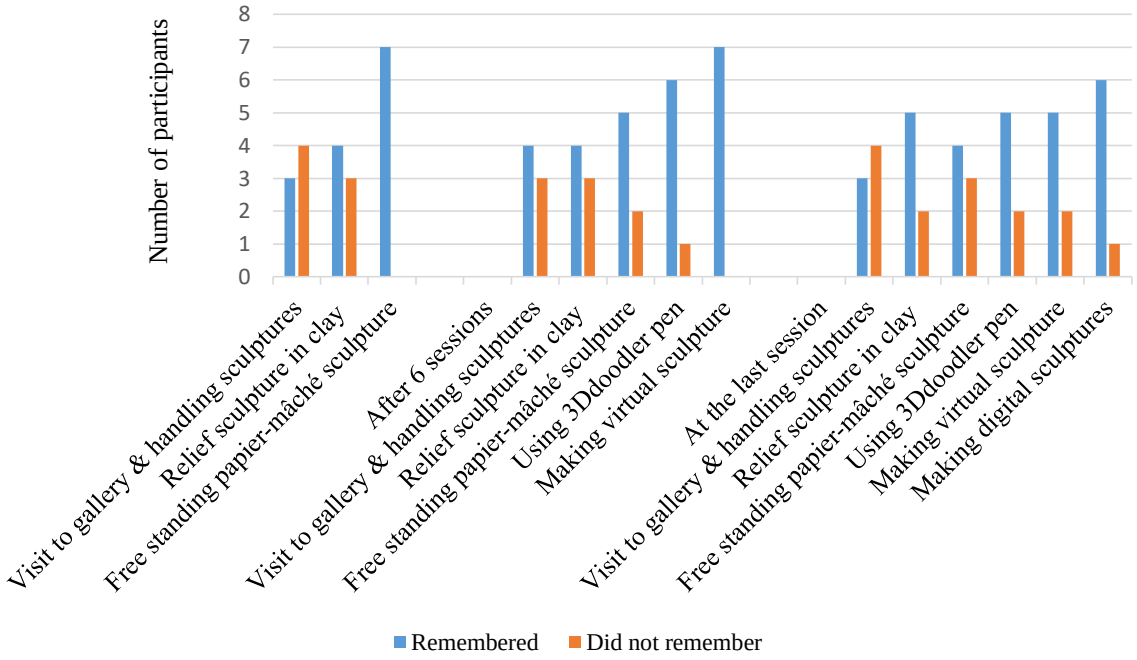


Figure 26: Participants reminiscing previous sessions after third, sixth and last session

An interesting finding was that the participants remembered the sculpture-making sessions more in comparison to the visit to the gallery and sculpture handling. This confirms that the participants responded more to the physical engagement of creating sculpture than to the art-viewing activities because the processes involved all their senses and they could see the physical form created from their self-initiated ideas.

Emotional state before and after the sessions

Before the start of activities of each session, participants were asked how they were feeling. The main purpose was to find out the impact on the emotional state of the participant while engaging with sculpture. The same chart (Figure12) was used for all the sessions. In the first three sessions, participants selected positive responses – “curious”, “confident” and “happy” before the sessions. After the sessions, their

selection was “inspired”, “confident”, “happy” and “curious”. However, from the fourth session onwards participants requested to have an option to write some other words about their state of mind. Four participants, David, Gary, Jane and Oscar, did not like the restriction of choice and Nelson and Oscar did not want to see the same emotion icons on the chart. This indicated their initiative to express their feelings on their own.

The first three sessions made the participants getting used to the schedule of visiting the gallery and then working with materials using traditional methods and had overall positive response after the sessions. In the fourth session, 3Doodler pen was introduced and participants selected either “happy” or “curious” before the session. Nelson selected “sad” before the session started which changed to “happy” and “inspired” after the session. Jane mentioned “curious” before the session and afterwards wrote, “Stimulated”. From the fourth session onwards, the approach to making sculpture changed and therefore their emotional responses also varied.

The session on virtual sculpture showed positive responses from all except one Nelson who mentioned “nervy” before the session started which changed to “happy” after the session. He felt “apprehensive” before the following session on the same work and, after working on her virtual sculpture, she wrote, “feel more relaxed”. David wrote “not very original today” before the session and after the session he was “content”.

In the sessions on digital sculpture-making Gloria wrote “Happy to be out” before the session started and “fine” after the session. Nelson wrote “at peace” before the session and “a bit rushed” after the session. The same participant in the following session remembered he had less time to complete his work and wrote “keen to approach more positively” before the session and “not improved much” after the session. Gary wrote “excited” before the session and “over excited and totally satisfied” after the session.

The results indicated a combination of emotions in all the sessions, which depended on five factors: participants’ mental state at that particular time, their physical condition, their interest in the process of making sculpture, the outcome of their involvement and the influence of the other members and surroundings. With each process, their responses showed some variations, however, with the introduction of digital processes the participants wanted to use their own expressions to state what their emotions were.

Thematic analysis of interviews

A qualitative research methodology was adopted to address the research questions, to provide depth of information and insights and to further explore the reasons behind perceptions and opinions (Flick 2014). The qualitative approach chosen for the study and the purpose of thematic analysis has been discussed in Chapter 3. The large amount of data were managed and analysed thematically with the help of NVivo 10 software

mainly used for qualitative data analysis. The aim was not to generalize but to provide an understanding of some aspects of the creative experiences of making sculptures by people with dementia. After analysis, it was peer reviewed by two independent researchers for content analysis of the interviews before, during and after the sessions and relevance. Thematic coding identified twenty-five main codes and seven themes emerged: Ideas and imagination, Materiality, Engagement with the process, Reminiscence, Selfhood, Personal wellbeing and Co-creation.

Ideas and imagination

Creative ideas rely on imagination, and therefore the connection between them emerged as one of the themes from the codes; without imagination, the ability to blend ideas into a sculptural form is very restricted. In their comments, participants expressed likes and dislikes of their experiences while they viewed sculptures in the galleries, pictures and slideshow at the sessions. The sessions aimed to encourage the self-initiated ideas of participants and their creative ability to imagine. Their pre-conceived and existing ideas formed a basis for creating new ideas. Everything they were shown was artistic in nature and channelling their ideas into a creative form required the freedom to imagine.

An example of how ideas became incorporated in the participants' works through their choice of preferences and imagination can be seen in Amanda's attitude as the sessions progressed. In an earlier session while viewing an artist's work, she commented, *"I liked the tender way the child looks at the mother"*. It was found later that her sculptures mostly reflected the sentiments between a mother and child. She was able to express her imagination in her comments later, *"Which only would show that whatever you feel about a subject and you put it into some material, it will look very real. Here what is so interesting is the child clinging to the mother".*

Another participant, Gloria, created sculptures, which represented flowers she loved. She said, *"I love flowers and I just thought it would be easier…no complication"*. But after the third session she made abstract forms and allowed the medium to dictate her works. She liked to express her ideas in words rather than drawings and worked with the materials straightaway adding and subtracting, repeating verbally her imagination and intention. On the other hand, some participants preferred communicating non-verbally by nodding their heads, moving their hands, etc. The simple exercise of being judgemental or give their opinion during the sessions on artworks, stimulated their creative ideas and imagination.

It was evident that giving prominence to their opinions impacted making their decision as this ability often declines in people with dementia. After viewing some sculptures one participant commented, *"I thought the whole thing was terribly boring because everything was one colour except one. I used the word dull not lightly because that's*

what it was" (Gary). In the following session of using clay, which he found grey and dull, he tried to visualise his creation with more colour. He said, *"I like colour… So here we are and I think that is complete and probably if I had this I would try to put some colour in it. And paint it probably. And see what happens and see whether I can get even more excitement out of it"*.

Materiality

The interactions with sculpture led the participants to sensory engagements, which helped in perceiving its physical entity. The use of materials in the making of sculpture gave each participant a different and unique experience. Thus, materiality as a theme was identified. Participants could sense the materials even without touching them, which indicated that they had retained the sense of touch, which helped in perceptual awareness. This was evident in the gallery visits to see sculptures displayed in glass cabinets. Participants were able to identify the materials such as metal or stone by sensing its presence and tactility.

Participants' material interactions influenced their emotional and cognitive experiences while engaging in the process of making. For most, the wet and soft feeling of clay was different from papier-mâché. Comparisons were inevitable and one participant commented, *"Clay was good, first time I did with my hands. But papier-mâché was more exciting made me think*" (Gary). Another said, "*I was most interested in the papier-mâché because I could not seem to come to terms with it. I could not handle the medium. Need lots more practice"* (Jane).

Unlike these two materials, the plastic material extruded from the nozzle of the 3Doodler pen restricted their touching the form. The virtual sculptures on the tablet screen could not be touched at all, they could only be visually sensed. The digitally created physical sculptures introduced participants to a different approach altogether as the tools were considered "machine-made" or "computer-based production". One participant gave the reason, *"I like tactile things and enjoy creating with my hands"* (Gloria).

The physicality of the material and its transformation reinforced sculpture's spatial existence and materiality. It was found that the participants gave emphasis to both material and form while they were viewing the physical and digital artworks. However, they emphasised material more than the form while creating sculpture, indicating their senses registered more about the materiality while engaged with the process.

Participants could clearly point out the difference between the traditional physical materials using manual methods and the digital versions because of the difference between the physical and virtual entities reflected in their materiality. One participant, Jane, looking at a sculpture on the tablet screen, said, *"the shine is too much here, do you think a marble shines that much?"* Another participant, David, commented on a 3D

model, *"This one definitely gives an illusion of the metal one you showed me earlier. It just does not look real; it is similar but not the same"*.

Engagement with the process

The act of creation involves coordination of hands and brain, of which people with dementia often lose control. The methods of making sculptures to create exactly what is imagined requires skills and techniques of using their hands and holding tools, which contributed to developing cognitive abilities. The identified theme was associated with the nature of participants' engagement, transforming and combining their ideas through observations and knowledge into sculptural forms. The subject matter of their conversations revolved mostly around the processes they were engaged in unlike the session on viewing art or handling artefacts.

Each process evoked different emotions and thereby different responses. There were reasons for the participants' preferences of medium, which often depended on the tools they liked. Some participants chose to engage with the processes which had some familiarity such as clay or papier-mâché. They tended to associate or compare the materials and the processes they liked. Gary observed the difference and said, *"I want to get my hands dirty, you know, get them working. And the computer does the opposite you know, you hit it and it comes out like this"*.

There was slight apprehension about virtual and digital sculpture-making processes. Jane commented, *"It is much more difficult to be creative using technology because there is temptation to let the appliance do it for you. But you didn't think of it first. It just happened and you make the best of it, you know. Whereas you are making something with paintbrush, a clean sheet of paper, (or) clay ball ideas got to come from you"*.

The overall involvement in the processes practically bridged the gap between their existing knowledge and understanding. *"I have not got any experience. I do not think I can judge the possibilities. But I would like to move things, sort of show something different like those earlier ones you showed us"* Jane. The feeling of being "in the moment" and doing something productive made an impact on all of them. *"We have achieved an almost strong result from such fragile threads"* (Nelson).

The efforts to play with clay and papier-mâché, hold clay tools, 3Doodler pens, tablets and develop drawings for digital sculptures encountered many challenges but curiosity gave an impetus to try. This was one of the factors to motivate them. *"I have never done anything constructive with my hands of that sort. It was a challenge for me"* (Gary). Sometimes anxious and frustrated efforts were visible when participants could not control the 3Doodler pen or when the virtual sculptures got lost in the screen or the program shut down on its own.

Some participants expressed fears and worries of not being able to do as instructed and were intimidated due to inability to control or complete their creations. Such reactions are almost like those of a normal person without dementia. *"I was horrified. I thought I cannot do this"* (Nelson). For creativity to flourish, these two things had to be side-lined. But some of the participants showed their anxiety and concern of not being productive. The best way forward was to engage those in the groups who were ready to try first. This often motivated others who were worried and reluctant to make an attempt to either converse about their work or try. *"What I enjoy doing and take great pleasure of is my fellow people, how wonderfully they can do things"* (Amanda).

Reminiscence

This study confirms that creativity acts as a tool for people to remember and recollect past memories. In the sessions, participants were able to articulate some interesting moments from their lives connecting with a particular session while engaged in artistic endeavours. With the condition of memory loss participants at times found it difficult to remember their life in a sequence. Certain memories, which were stronger, and others associated with their emotions were revealed during the sessions.

The sessions on clay made the participants reminisce on their previous experiences and the way they remembered using clay in their life. *"I was evacuated during the War to Staffordshire. The local people's dialect was different. And I had to attend school when the resident pupils were not using the premises. I was introduced to sculpture using clay at this time"* (Jane).

Sometimes, while working with the 3Doodler pen, participants who were not able to control it modified their original ideas. Forms created by mistake sometimes brought back memories. One participant unable to control the pen piled up the plastic threads in a circular form with a hollow centre. Admiring her creation, she said, *"I love baskets. I went to some classes for basket weaving… did not actually get a chance to make a basket in the end. But I love baskets"* (Gloria).

Another participant, Oscar, shared his story while making a drawing of a piped organ for 3D printing with the group, *"What I have not done was…there was a time when I used to play the organ when I could remember easily what the bits are. That was about years and years ago when I was, how old was I…8 or …. I was about 18 something like that. I tried to think what it actually looked like".*

While recognising the abstract forms of virtual sculptures, many participants tried to remember exactly what it reminded them of. It was a tedious process for them and some found difficulties in combining their thoughts with the form. However, most of them made positive comments, which sometimes brought laughter in the group. The ideas, which they developed for the 3D printed sculptures, actually originated from memories

associated with their past life. Three participants carried on working on the same pattern of themes from the previous sessions in which they were very emotionally involved: nautical scene, mother with child and seasons. Four participants made conscious efforts to depict their ideas from memory in their drawings and showed determination to see them developed as a three-dimensional form. This enabled them to believe in their strength to remember things from the past.

Selfhood

Sense of identity is an important feature which people with dementia often fear losing. The condition of dementia may affect the awareness of self-identity and as a result they feel their skills, talents and personality are slipping away and they are losing their purpose in life (Hydén, Lindemann and Brockmeier 2014). An example is a comment by Gary, *"The creation of all of this? And me with all my problems, the fact that I have never even drawn, I have nothing to show and nothing to shine out"*.

While participants engaged in artistic activities, their imagination and visualisation provided them with another world in which they became the creator. While making his papier-mâché sculpture, David was very cheerful and commented, *"Trying to make the shape and it all turns right the way you are hoping it turns out right. Oh, that feels good"*. The sculptural forms they created reflected their selfhood, which is identified as a theme in this study.

The sessions were designed in such a way that the participants had multiple tasks to perform - conversing about artwork, developing and sharing their ideas, learning the process and then finally, creating sculptural form. All of these stages, step-by-step provided them with a sense of purpose, to do something constructive. Nelson commented about his first attempt at making a virtual sculpture, *"The highlight was being shown something new and something to think"*.

The processes were demonstrated individually to each participant, but shared with other members in the group to see and follow, which made them feel involved and supported. Though the sculpture-making processes had the same instructions for all participants, they adopted their own individual approaches to make it easy. Adaptability to new situations was apparent. They had ample freedom to create expressive forms based on their ideas but the sense of control was required in making sculpture. It was evident that they realised this difference, on the one hand of freely expressing their self-initiated ideas verbally or by drawing and making maquettes, and on the other hand the constraints of technique in each process. Only by practicing, they were able to attain self-realisation, which subsequently informed their opinions and attitudes towards sculpture.

Personal wellbeing

The impact of dementia on everyday life may make a person feel withdrawn and socially isolated because of the declining cognitive abilities often alongside having other health related problems (Moyle, Kellett, Ballantyne, & Gracia, 2011). In this study art appreciation and art production activities in a group environment enabled communication, stimulated discussions and sharing of interests. These interactions helped the participants in expressing their thoughts and emotions verbally and artistically.

All participants had expressed their problems with concentrating for long spells as well as their decreased attention spans in everyday life. Some had given up their day-to-day activities such as reading, embroidery and playing keyboard as they found it hard to follow instructions. But in the sessions of art viewing they were able to show their attention to the details of the sculptures. An example is of a participant, Amanda, looking at a portrait who said, *"It is wood, very heavy. It looks Sphinx like…no it looks like Queen Victoria"*. Nelson on his overall view of gallery visit commented, *"Deepened my understanding of sculpture. It made me pay more attention and appreciate the variety"*.

In the sculpture-making sessions they were able to follow step-by-step instructions to produce sculptures, which indicates that art interventions stimulate the cognitive processes of attention and concentration. Responding to the question on improvement in artistic skills, David commented, *"Mentally but not physically. I mean, anything I have learnt, I have learnt in my head rather than what I can do with my hand. I have started seeing things, which never interested me before. I watched BBC Antique Show and saw a beautiful porcelain figurine. I knew I have seen something like that in the gallery before"*.

The activities going around encouraged participants to contemplate rather than just focus on their abilities. The first attempt of using papier-mâché, initiated Gary's independent thinking of one participant, which was useful later in his creation. He said, *"What happened in the middle of the night is I had thought what I wanted to do. What I had done (with the sculpture) is the back to be higher than the front and I suddenly said you have to make it a bowl. Then I said if I make it a bowl then probably I will have to chop it off a bit and put a flat bottom to it"*.

Wellbeing is a subjective experience and it was seen quite often when the participants had expressed feeling better after an activity. The comment of Oscar clearly stated the change in his mood, *"Was not feeling very clear headed, happy to be here"*. Gary after his first attempt with clay stated, *"I was overexcited and utterly satisfied and thank you so much"*. Participants felt satisfaction of completing a task and sense of achievement.

Nelson after completing his virtual sculpture using an app on the Android tablet said, *"There was a satisfaction in being able to revisit and put things right"*.

Co-creation

All the sessions were based on the principles of co-creation and collaboration between the participants and the artist. Co-creation has the capacity to influence the skills and process of working of those involved as well as the communication of ideas and personal reflection (Zeilig, Killick and Fox 2014). It was important that the professional artist involved in this study understood properly what the participants wanted to convey and made no alteration to their original ideas. The artist's contribution was mainly to give professional advice in terms of skills and techniques. Working together in a group enhanced greater participation and built up a mutual relationship where the exchanging of ideas and communication formed the basis of co-creation and the group flourished because both sides were equally involved.

Gary who had never before created anything artistic, recalled at the end of the study how the co-creation feature had helped him in his attempt to create his first ever sculpture in clay. *"And it has got to be something (for relief sculpture), and its Christmas. Let us take some holly and lovely lady helping me. She said, I will just do this for you, I think that is the shape of the leaf and I said that is fantastic. And she did no more and I copied it and everything and it was done. She could have almost done this or she could have done and told me to place it. But she let me do it and it was absolutely right"*.

With age-related physical problems, some participants were not able to use the tools available and needed support. Nelson gave credit to the people helping him to achieve what he wanted and said, *"Sometimes we were given a machine (3doodler pen) to use which did not work properly which did not help (me). Everyone's was the first time on it. So I could not, it started putting me off and this lady showed me how to do it. Then you fixed everything and then things improved week or so later. I kept on working and I knew you will fix it if I go wrong. And I was most satisfied when it was over"*.

The artist and volunteers offered help when needed but not in ways that interfered in the process of the participants' work or that altered their self-initiated ideas. At the end of the sessions, Gloria said, *"I liked all really but I find because of my condition it does not come out how I wanted to. But then I got help when I needed it. I think sometimes did I really make it?"* Working together in this way ensured that participants remained engaged and motivated to achieve their creative outcomes.

4.4 Rethinking and reframing dementia

The creative engagements with the participants in this research initiated the need to reconsider the way they feel, think or behave despite their condition and how their creative potentials demand reframing of our existing understanding of dementia. Gorp and Vercruysse's approach to reframing dementia was based on media's negative depiction of the condition to the society. They pointed out that previous studies showed three different ways of media's role in stereotyping the condition. Firstly, the severity of the condition is shown in media which generalises the same for everyone; secondly the person who has dementia does not always get the chance to speak about their experience while someone else may speak on behalf of the person, and lastly media tries to only highlight the sufferings of family members. Their study examined books, audio-visual materials and public health care brochures in Belgium. The results presented six frames and six counter frames. Five of the frames were negative in approach except "Faith in Science" which reflected the prospect of finding a cure and medical discoveries. The dual nature of material body and immaterial mind was the most dominant frame. The other frames presented dementia as an "intruder" which has to be fought or as a "travelling companion" which never leaves the person. Their study systematically presented the socio-cultural frames of understanding dementia through the eyes of media as to the general acceptance and perception of the condition (Gorp and Vercruysse 2012).

Another approach was presented in Beard et al.'s study reframing dementia through narratives of lived experiences of people with dementia. Their study was based on email communication from a person with Alzheimer's and her husband with twenty-seven other participants. Besides their memory loss, participants mentioned about "rough spots" and strategies undertaken to overcome the personal, interactional, and environmental factors causing problems (Beard, Knauss and Moyer 2009). Beard et al.'s emphasis was on the individual and not the condition; the narratives of the participants who felt very differently about their being diagnosed with dementia and not the general stereotyped assumptions of the society. From the narratives, it was found that participants with dementia have the strength to cope by employing "concrete activities, emotional responses, and environmental adaptations". The individual experience of managing their lives despite memory loss contributed to possible ways of reframing dementia from the perspective of the person affected.

The above examples present different interpretations of dementia and how new meanings emerge from different non-clinical perspectives. Similarly, art interventions offer a multitude of therapeutic and creative possibilities emphasising the transformative potential of sculpture as an art form through its perception as well as its creation. This enables people with dementia to re-imagine lived realities, to rekindle memories or to

reveal unseen visions. Their experience of sculpture reframes the remnants of the artistic interactions and the time spent in creative environment. Therefore, the framework of this research has centred on conceptualizing imagination, memories and identities, on the one hand, and focused on the impact of co-creative activities using a number of sculpture-making processes and stylistic approaches ranging from traditional to digital methods, on the other hand.

4.5 Summary

This study explored self-expression of seven participants' with mild dementia through creative engagement which was thematically analysed. It examined their involvement with different types of activities relating to sculpture and the process of its making in the shared space of a group setting supported by a professional artist and volunteers. Viewing and handling of sculptures helped in determining the preferences of the participants. Five different processes of sculpture-making were selected - creating sculpture with clay, papier-mâché and 3Doodler pen and also creating virtual and digital sculptures. Findings indicate that these processes, which included traditional and digital methods, contributed significantly to motivating the participants who had early stages of dementia. They preferred the use of clay and papier-mâché perhaps being familiar with it and easier to relate to. However, there was substantial evidence to prove that the virtual and digital methods of sculpture-making could also equally engage them to work on their self-initiated ideas.

The sculptural outcomes had the combined efforts of participants and the artist which highlighted the importance of co-creation. The collective and collaborative environment aided in their skill development and understanding of each process, even though for some this was their first contact with sculpture. Interaction of participants with various kinds of sculpture became source of communication, reflection and stimulation. Thematic coding brought up twenty-five main codes and seven themes were identified: Ideas and imagination, Materiality, Engagement with the process, Reminiscence, Selfhood, Personal wellbeing and Co-creation., The overall sensory experiences of sculpture-making processes and the spatial awareness contributed in keeping them interested and stimulated. The sculptures reflected and represented personal imprints of their individualities contributing to self-awareness and sense of achievement. As a result of the study, the importance of framing dementia through appreciation and outcome of creative engagement with sculpture was comprehended.

Chapter 5: Reflective engagement of a practising artist

This chapter presents the perspective of a visual artist and is based on my art practice of making sculpture as a culmination of observations, studies, research and understanding of working with people with dementia. The approach to framing the creative practice of sculpture-making for my academic research was largely based on my own experience of critical and reflective arts practice. The collegial interactions of the sculpture-making sessions gave me the opportunity for creative experimentation and critical reflection to explore new forms and expressions in my art practice and present in public exhibition.

The interplay between academic research and the creative activity involved in art making is an important contribution to this research. To practise as an artist and investigate as a researcher entailed a very systematic approach and consideration of the individual freedom of expression of the people involved. The practical action of making sculpture combined with critical reflection on the art making process was central to this.

5.1 Artist's involvement in art practice and artist-led activities

Art practice is defined as a process of intellectual and imaginative inquiry embodying the creative ideas and reflective thinking of an artist; it often forms meanings which have the capacity to influence and act as a source of inspiration. Art practice generates a deeper understanding of what the artist feels needs to be expressed. Irrespective of the medium or method used, every moment of artistic development is the conscious effort of an artist involving subjective and objective awareness in the art practice. Artwork comes into existence through an artist's conception of a creative idea, which gives it a form.

The versatility of an artist can be seen in his/her expressions but it is always rooted within arts, sometimes engaging in an activity of creating an original art or demonstrating art by practical engagement as a teacher. Hence, artist-initiated projects can have much more to offer because of the involvement of an artist who initiates organisation, development and finally the execution of art activities. Art practitioners in artist-led activities "seek to teach skills including questioning and critical reflection and promote experiential learning" (Pringle 2009). They take on multiple roles as educators who are mainly teachers or facilitators or enablers. Artists act as mediators and mentors and create a space of inspiration and "artistic thinking" where thoughts are shared and ideas are explored. In the art-based activities, learning relies completely on collaboration, exchange of communication, sharing of experience and introspection.

However, the most important contribution of an artist as an educator is sharing knowledge and skills with the learners. In artist-led activities, the process of constructing new meaning in artistic creations and stretching the boundaries of imagination often rely

on discussion and exchange of ideas between the artist and the learner. The artist enables learners to interact with art, which influences their perception and motivation in developing creative outcomes.

A practising artist as a creative individual has the sensitivity to feel the pleasures that art offers. In artist-led activities there are possibilities of conveying the same feeling and channelling the artist's own experiences to learners. The actual working process of a professional artist and the artist's own personality are the driving force behind the success of artist-initiated projects. The artist involved has the advantage of emphasising own art practice and at the same time provoking creative responses. The question thus arises as to the extent to which an artist can initiate these responses without leaving one's own mark on it.

Sometimes art originates because of something which affects the artist beyond literal comprehension leading to a much deeper understanding which contributes to the inception of ideas and concepts. This meaningful and moving experience results in a unique subjective interpretation. The process of making art enables an artist to make conceptual discoveries using cognitive processes, which may be intuitive or reflective responses to social interaction with people. Emily Pringle confirms this, "Art practice is defined as a process of conceptual and experiential enquiry which embraces inspiration, looking, questioning, making, reflective thinking and the building of meanings" (Pringle 2009).

5.2 Previous art practice

In the visual arts, the human body has always been very intriguing as a subject and a perennial source of inspiration (Flynn 1998). The perspective of human figure in art opens up an avenue where we find the impact of different cultures along with their aesthetic awareness. Idolising the beauty of the body can be seen throughout art history, which shows changes in artistic sensibilities in different periods. These are in the shapes, forms and features of human body interpreted in myriad ways by the artists and perceived by the viewers.

An example is Ugo Rondinone's sculptures. His sculptures are intentionally devoid of expressing any movement or action. Silence and stillness are the very essence of depicting his human forms in a static state. The resting positions of his *Nude* series are very realistic, though some of the joints of the figures show the armature inside (Rugoff, et al. 2014). This creates a feeling of deconstruction and detaches from the subjective quality of the body itself. On the other hand, Huma Bhabha's portrayal of human body as decayed, dissected or dismembered builds up a relation with her assemblage of found objects and recycled materials (Strauss 2015). The impression of the construction of forms is visible and so is the deconstruction, which uniquely blends in her works.

Anthony Gormley's sculptures present the notion of space occupied within and outside our bodies. The relation of body to space and moments of time reflect in his interpretation of the body. In an interview, he referred to the influence of Indian art in his works. He said, "I think I am still there; that is still at the heart of my work: looking at the body not as an image, not as an icon to be used for its symbolic or narrative purposes, but the body as an open place of inquiry and exploration that is constantly changing, that has no defined characteristics and we just have to watch, to attend to" (Boeckel 2010).

My art practice reflects the Indian philosophy, with the realisation of human body where the outer appearance co-exists with the inner body. The presence of the external exquisiteness of the human body is due to the inner essence of the self. This can happen when the outer world of self-knowledge and the inner world of self-realisation are in balance which is a different approach from the Western concept of the beauty of body. I have always been interested in representing human forms where I could reflect this in my sculptures. I tried to give equal emphasis to the hidden depths inside a body and visible outer surface (Figure 27). Keeping this in mind, I created figurative sculptures using fly screen wire mesh that was not only see-through but also had a reflective surface. Simultaneously, I continued experimenting with other processes of making sculpture. The life size sculptures, which I created, were very difficult to transport which made me interested in digital methods. Channelling the works using digital technology through virtual space and later realising these in actual space in any other part of the world, was very appealing.

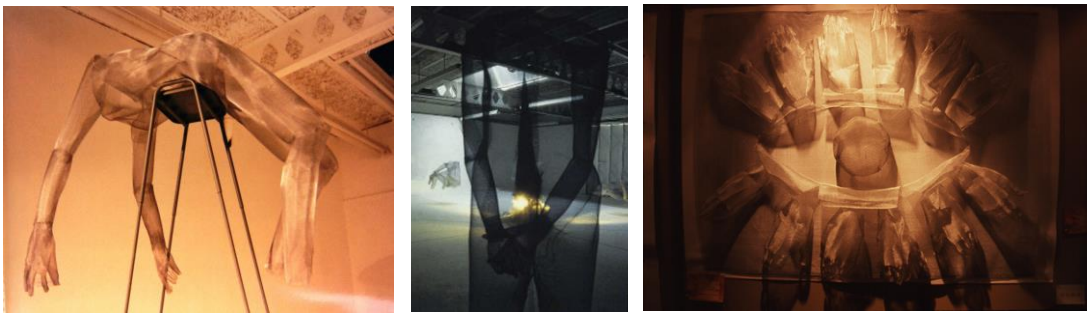


Figure 27: "*Isolation - 1*" (left), "*Isolation - 2*" (middle) and "*Jialushei Impression*" (right) made out of fly-screen wire mesh

Alongside my methods of creating sculptures, changing from manual to digital methods, I wanted to find ways to create the wire mesh as a material in the virtual realm and later digitally created physical sculptures. Sculptures remained figurative and I carried out a detailed study of various *Yoga Asanas* capturing the beauty of the unusual body positioning in a realistic way in 2010. I spent a lot of time practicing it as an everyday exercise and at the same time observing others doing the *Yoga* postures in their own ways. The practice of *Yoga* connects the external exquisiteness of the human body with the inner essence of the self. *Yoga* affects the body from inside out.

The 3D modelling of figurative sculptures of postures of *Yoga Asanas* were created using Autodesk Maya and each model was rendered to show the effect of wire mesh on the surface and hollowness inside (Figure 27). The virtual models I created inspired and challenged me to engage further in other digital methods. It helped me to demonstrate the paradigm shift of an artist's enquiry of conception of digital sculpture in my MPhil research study. My first attempt was making an animation to show the virtual sculptures displayed in a recreated virtual gallery with light settings as seen in a real exhibition space. For a sculptor, this is a very effective way to visualise the sculptural forms in actual gallery settings.

The processing from virtual sculptures to real physical forms involves either additive or subtractive manufacturing technology. Rapid prototype technology was more suitable for the production of the models I created. I wanted to have the effect of fly-screen wire mesh on the surface maintaining its actual dimension and thickness and its perforated holes with the hollowness inside of each model. The virtual sculptures were modelled in Autodesk Maya and were finally produced (Figure 28) in Acrylonitrile butadiene styrene (ABS) using Stratasys Prodigy Plus Fused Deposition Machine.

Figure 28: Virtual model of *Yoga Asana – Gaumukhasana* (top left), Rapid Prototype manufactured sculpture (top right), 3D animation of virtual gallery (bottom left), Augmented Reality experience on tablet (bottom right)

Another process of integrating the virtual sculptures in real space enabled me to consider Augmented Reality (AR) application. It helps sculptors to visualise any virtual sculpture in real space very easily enhancing the current perception of real space by linking the virtual and real space. The development of this application was in collaboration with a programmer who used the 3D models of my sculptures.

Engaging in the above-mentioned digital processes my research helped to review the basic elements of sculptures mediated through digital technology and to expose the shifting patterns of its visual understanding to artists and viewers of today. To ascertain what is seen and how it is seen, my sculptures were exhibited in a real gallery space of Studio3 Gallery at University of Kent for viewers. Their individual perceptual experiences contributed to the recognition of the changes in responses to both the real and the virtual presentation of sculpture. The integration of digital methods in my art practice therefore provided an opportunity to find ways to present at par the objective reality of a human body and the subjective emotions and responses it arouses in me.

5.3 Influence of participants and conceptual enquiry

At the onset of this research, I started working regularly at the Beaney House of Art and Knowledge and community meeting centres under East Kent Independent Dementia Support, Whitstable Dementia Café run by Alzheimer's Society and Age UK, first as an observer and later as a facilitator. Originally, my role was merely to observe while facilitating the workshops but the shared creative space turned out to be very inspirational and emotional. The way we interact or behave with other people often reflects the cultural background, social customs and values associated with it. It becomes discernible when an individual starts interacting with someone from a different background. In my case, having been born and brought-up in an orthodox Brahmin joint-family in India, I became aware of the cultural differences in conceptions of self and relationships with others; more so when I started interacting with those in the workshop sessions who were elderly people. Values of sharing life moments and respecting elders come naturally to me, which are built on the all-encompassing foundation of positive relations with family, friends and community. In India, dementia still has a stigma attached to it; therefore, many cases are undiagnosed and considered as part of the normal ageing process.

Initially, my intention was to examine how creative workshops for people with dementia operated in these spaces and what factors contributed to an engaging environment for them to do something creative. The differences in social and cultural orientation I came across posed a challenge and had to be tackled to create new relationships. I had to deal with the reality of coming across cases of exclusion of elderly members of the family due to the condition of dementia and age. Working as a facilitator and getting involved in the activities helped me overlook the cultural aspects and differences and closely observe their attitudes and reactions towards art and creativity.

My experience of leading community art activities from time to time corroborated my understanding of the potential impact of creativity on individuals as a collaborative and reflective process. Being a researcher as well as an artist had added advantages – firstly

finding familiar and unique patterns, and secondly experimentation. It helps in an artist's enquiry by not only addressing the academic research questions but also providing novel and inspirational perspective.

Boden described the three ways of creativity - combinational, exploratory and transformational - which was possible to experience in the working space of a gallery or community centre (Boden 2010). My interest was to find out which would be prominent and significant. "Combinational" was more common as participants could engage with their familiar ideas and give new meaning to them with the help of workshop leaders. As for "exploratory and transformational", generating a completely new idea by exploring and transforming, was less common. These observations were helpful in comprehending and planning the workshops so as to be conducive to *creativity* for people with dementia.

The first workshop on sculpture making was conducted at Dementia Café in Whitstable with participants who had different stages of dementia and later at Beaney House of Art and Knowledge in Canterbury with participants with mild dementia. My role then changed from that of facilitator to an educator where I was not only teaching but also working as an investigator exploring and instigating ideas and concepts. People with dementia in the group workshop settings had to be provided with a supportive and collaborative space to absorb new skills and encourage artistic thinking. I wanted the sculptural forms to reflect an individual's intention to create - emotional reaction, exploration of thoughts, imaginative skills, making a statement or for pure artistic pleasure. All of these culminate in creative expressions.

While organising and conducting the workshops, I realized that as an artist my inquisitiveness and the purpose of my enquiry were making sense of my experiences as an educator. My participants as learners were showing me how to think, make or experiment in different ways by stretching their ideas, challenging the skills of sculpture-making and consequently connecting me with their individual personas. My reflective observations and active participation were central to the creative endeavours of both making me contemplate my role in the workshops of sculpture-making as a mentor and also as a collaborator.

The journey of working in a shared space and the learning process became very important as an outcome of the workshops. This came from my realization that the time I spent creating the sculptures with the participants was far more significant than teaching them the processes of making sculpture. The latter was always one way, where I was the one explaining and demonstrating. I wanted to gain deeper insight to the ways each process of making sculpture is mutually experienced. On one hand, artist-led activities were instigating the involvement of the participants in artistic engagements of

thinking and making sculptures and on the other hand, the artist encountered influencing factors for her own practice. Based on my observations, the shared space and the environment reflected an individual's presence in a particular time and space as well as the emotional state of mind. With the changes in memory retention, there is a tendency of the participants to forget later on what they were doing in the workshops. However, all of them left imprints of their physical presence, their conversations and the created works that turned out to have a long lasting impression on me.

One of the quotes in Sanskrit from Hindu scripture, *Bhagavat Gita* had a very strong influence in my upbringing- "*Sarvabhootastam Atmanam, Sarva Bhootani cha Atmani"* (Sargeant 2009, 300). It means to see yourself in others and others in yourself. This acceptance of not just to empathise, but also to become a part of another person's experience of life, became central to my involvement with people with dementia. As I got involved in the sessions, I could sense their feeling of social isolation because of their condition distancing them from what they normally felt earlier and gradually losing their abilities. Interacting with them made me realise that my grandparents had taught me that patience and perseverance are important for progression in life; this had embedded in me and now I was practising it spontaneously in the group activities.

A new relationship developed as if everything was told for the first time and we conversed through art making me part of their present. Everything came naturally, I was able to connect with them by being patient, giving them due respect and importance for being just as they were. Sometimes participants did not feel like doing anything, having one of their "bad" days. In one of the sessions, I came across Amanda as very aloof and not engaging in any way. Keeping the conversation going with others around her so that she was part of it, I started making small clay balls and sculpting happy faces on it. I handed over a few balls to her to give it a try and she picked up a clay tool to try sculpting impression of a face on it. I kept on handing the balls to her and she kept on making faces on its surface. By the end of the session, she said she had worked on twenty eight balls making faces only. After the session was over in her interview of what she did in the session, she said, "I made these recognizable shapes. I do not know what it would look like to you. It was a simple task and easy to make the faces. I could poke a few more faces (laughing)".

My art practice as a result of these interactions in the sculpture-making workshops were an amalgamation of the lasting impressions of the activities and my heightened awareness. Accounts of personal lives of participants and interesting comments during the sessions made me realise how deeply they affected my receptivity. Some of the intense moments of the days and about the artistic activities were vivid - memory of a person, an incident, an interaction and unusual reactions. One example is David's love for sailing. Most of the time our discussion while developing ideas for sculpture- making

revealed his love of sailing and nautical themes. Due to his condition and arthritis, he was no longer in a position to get involved in any physical activity of sailing. In one of the sessions when asked what he was drawing, he said, "I am learning to draw waves. I want to feel the pleasure of sailing". The essence of this conversation remained with me which I later depicted in one of my works.

There are some artists who have drawn inspiration from their involvement with people with dementia which reflected in their works. Georgie Meadows, an occupational therapist and artist based in the UK, had an exhibition titled *Stitched drawings* in 2016. She transformed her pencil drawings to machine stitch on fabrics of her reflections on ageing and dementia. The tactility of the tangled threads was her metaphor for the neural connections in the brain of those with neurodegenerative conditions. In 2016, art installations by Carol Hanson another artist from the UK was based on her observation of "Dementia and Imagination" art sessions involving people with dementia in North Wales. Her *The Doris and Ivor project* was inspired by the humour she witnessed during her time with the participants.

Printmaker Simon Ripley during his artist residency at Franklyn Hospital, Exeter, worked with people with dementia. He exhibited his works as well as works done by hospital residents in the weekly workshops, in the exhibition *Forget Everything: New Art and Dementia* in 2014. He found creating abstract images were freer with expressive qualities and the ideas were more subjective compared to representational images. Jayne Lloyd, also an artist, exhibited in 2015, her artworks were similar to the above examples except that she was also a researcher questioning the role of art in care home settings and gallery space. Her works were based on her observations of Age Exchange's Reminiscence Arts Practice and her combined experience as a practising artist, an arts workshop facilitator and arts researcher. The focus of her research was on Reminiscence Arts and Dementia – Impact on Quality of Life (RADIQL), a programme by Age Exchange Theatre Trust and funded by Guy's and St Thomas' Charity in the UK.

Some artists had a personal connection to what they were expressing through their art. Sculptor Ian Campbell-Briggs created *Wife-Mother-Carer*, which was inspired by his mother who had dementia in later years of her life. The sculpture was a female head, three times larger than life size with curvilinear lines made of steel with a rusted finish, which denoted confusion in dementia and was left hollow intentionally from inside. He donated this work to Friston House Care Home where his mother was residing when she had dementia. Similarly, installation and book artist Karen Guancione's work *Spring Sutras* was dedicated to her mother whom she was looking after when she had dementia. The site-specific installation was displayed at the John Cotton Dana Library at Rutgers University, Newark. A large number of recycled catalogue cards were hung with strings from a two-storey high skylight. The hanging cards touched the viewers while they

moved in that space. Artificial flowers were suspended in display cases in the same space, which were very colourful adding contrast to the whole display. As the title suggests, this work was in celebration of renewal just like spring, *sutra* meaning the thread which held the past in the shape of the cards and the flowers were tribute to the old and welcoming the new.

Australian mother and daughter, Ann and Sophie Cape had an exhibition *An Unending Shadow* in 2015. It was their understanding of dementia and the way it affects family, friends and community. Their personal experience with a member of their family and dealing with everyday problems was reflected in their works, which they brought into a public space to bring more awareness. The exhibition included portraits of people with dementia and their carers along with large-scale abstract works. In contrast to these works, Sue Yang's works titled *Memory: Time* presents joyful memories of her 95 year old mother who had dementia. Bathroom tissues were twisted as strings and dyed in pink colour which was a metaphor of the fragile and elusive nature of her mother's memory which could easily dissolve or change shape. The artist tried to show the unpredictable aspect of memory loss; however, it was the delight and happiness her mother experienced which was captured in her work.

Jenni Dutton did a series of sewn portraits of her mother in wool and threads from 2011 onwards known as *The Dementia Darnings*. Her work helped in dealing with her mother's condition as it deteriorated while she looked after her as a carer. The works reflected the ageing process of her mother and the details she observed making her portraits. However all the works were the outcome of love for her mother which was as sensitive as the threads she used letting them dangle at the bottom like the disconnected memories of her mother.

All the above-mentioned works imply that art has the cathartic capacity to present complex issues of the condition of dementia when it is shared in the public domain. The experience of the artists, either personally involved or emotionally affected, have led to lasting personal and social change. Are the emotional responses of those artists who have known someone all their life any different from those who are meeting for a shorter duration? The important issues I had to reconsider was the possibility of my observations being affected by social or cultural bias and consequently art becoming less about the individuals involved or more about the artistic practices.

5.4 Creation of sculptural forms

Marilena Rusu said empathy involved in an artwork has the tendency to remain active by nature and thereby gives a distinctive emotional character to it (Rusu 2017). Does it mean making an art from empathy is much more effective than perception and observation? She argued that "The artistic product itself, synthesize, in turn, subjective

intense experiences, constituting mirrors of a moment and also becoming unpublished archives of a social subtext, as the theme, work style and other attributes allow us to recognize the time in which lived the creator of the artwork" (Rusu 2017). Taking this into account, experiences of working with people with dementia and simultaneous introspection effectively remained the source of inspiration for my sculptural creations. In addition, feelings and emotions along with perceptivity gave a new direction externalising my inner thoughts which I had experienced in the company of my participants.

The longest period I spent was with the group of seven participants in the sculpture-making sessions at the Beaney House of Art and Knowledge. I strove to capture the very essence of their personalities with all their complexities. I gathered data, which comprised of questionnaires, interviews, audio and video recordings and observatory notes. Initially, my observations of their physical presence in the sessions were extremely overpowering. Close observations somehow made me look beyond the obvious that people usually see in those who have dementia. Behind the forgetfulness, confusion and perceptual difficulties, I found them completely normal because I did not know them before they were diagnosed with dementia. I was part of their life now and shared a particular "moment", which was built upon our relationship. Unknowingly, subjects that were relevant to their lives, surfaced in our interactions and for some these turned out to be very intimate and personal. These generated ideas for sculptures they created with the support of my guidance which made the co-creative aspect integral to the method of sculptural creations in the sessions.

Without any conscious effort, I became aware of the sense of being-with and being there constantly communicating verbally demonstrating or describing each process to the participants throughout the workshop sessions. Though these conversations established instant connections with each participant, the non-verbal communications were also equally effective, which slowly made me aware of their existence in my thoughts. Jill Hayes commenting on creative activities in dementia care stated that it is necessary to reflect upon the unusual ways our bodies sometimes communicate and the messages they convey (Hayes 2011). These could have a different meaning culturally or in some other situations. People with dementia may reach out with their feelings or expressions to be understood and art could be a bridge which artists could establish with their receptivity. During the sessions I realised that this was not a one-way process, I was also contributing to this experience of co-creation with the participants as receivers.

I engaged with the participants at a completely different level where I adopted their visions and realised the intensity to reveal their ideas in the sculptural forms. My professionalism did not allow me to make any changes or alterations in their creations which would have affected the authenticity and originality. Therefore, I got completely

immersed in their creative endeavours, things which inspired, excited or stimulated them in the shared space. But away from it all, I felt a space within me of an inner artist, where the memories, conscious or subliminal, raised and lead to an awareness I never envisaged before.

I followed a particular process of realising the memories into expressions, which was completely unusual from my previous approaches to making sculptures. I started my work with an attempt to recall the sessions and I tried by remembering as succinctly as possible a person or a moment. I removed every extraneous factor in order to focus on what really mattered to me. The conception of each sculpture went through a range of catharsis, eliminating certain thoughts, which existed during the interactions with participants but did not seem important anymore.

The creation of my earlier sculptures displayed controlled action where I emphasised the bodily control and stability. But after working with participants who had dementia, the unstable and changeable nature of my subjects challenged me and acted as a stimulus for insightful creativity. Things, which I considered important to be visible earlier, were only a part of reality. The interactions with the participants provided a definite connection to the representation of their reality within the formation of the human figures where the fragments of my memory integrated in. Therefore, the visual presence of human figure had in addition layers of conscious meaning, providing content, which were both narrative and symbolic of representing the personal stories shared.

Representation of human body in clay

My art practice is predominantly based on digital technology and changing the process to make sculpture using hands and tools was a conscious decision. I chose clay for my works as this was the first material I always introduced to any group I worked with. I did the same with these seven participants and overall received a positive response. I started with a simple attempt to present the figurative formation of each participant the way I perceived and remembered it.

I did not have a finished result in mind when I started making these figures. I chose to make my sculptures in small size, the reason being my realisation and observation that participants preferred small sized objects which could be held or which were within their range of vision. The small size enabled them to pay more attention and be able to absorb more which was ideal to hold their interest. It was a challenge for me to depict the relationship of the body and its identity. I strongly agree with Nicholas Mirzoeff's comments on representing the human body, "The body in art must be distinguished from the flesh and blood it seeks to imitate. In representation, the body appears not as itself, but as a sign. It cannot but represent both itself and a range of metaphorical meanings, which the artist cannot fully control, but only seeks to limit by the use of context,

framing and style" (Mirzoeff 2006). The intangible impulse of thought and memories of the participants were the main creative attributes leading me to represent them in human form as they were.

I knew my creation would be constantly evolving, as I did not make any maquette or preliminary sketch. Using the water-based terracotta clay allowed me to make changes easily and be able to work on the same sculptures for a longer duration to bring in as much reality as possible. However, there were some common elements which I identified before starting the pieces: figurative composition, conscious individual reflection and representation of thoughts from memory.

It took a long time to begin with a lump of clay but by slowly handling with measured judgement of adding and subtracting it started giving shapes to the body. I worked in my studio and tried to create a physical model of each participant after every session. While creating the sculptures, I did not use photographs as reference and I created everything from whatever remained in my memory of being in their company. I tried to recreate in my sculptures each participant the way I looked at them and the way their presence affected my artistic sensibilities in the sessions.

I maintained eye contact with the participants in all sessions making sure that I was holding their attention. Though I was mostly looking at the way they were working with their hands, I realised what registered in my mind was their faces. They were not exactly the same as they looked and were representations only. I tried to tweak some of their features so that their identity was not revealed. The positioning of the eyes and nose was manipulated by shortening or lengthening the distances and changing the shapes. It had to be something more than the physical resemblance, it had to reveal the participants' personality with all their complexities and shortcomings. With a sense of naturalism, the figurative sculptures had to reflect things which were relevant to the participants' lives and capture their inherent gestures and expressions.

The set of seven sculptures created in clay aimed to bring attention to the variety of sentiments which I experienced working with the participants. All the sculptural forms are free-standing showing very detailed faces compared to the entire body. Their facial characteristics remained in my memory very strongly and naturally, I gave more emphasis to it while modelling. An example is Figure 29 (left) which shows the figurative sculpture of Amanda who had repeatedly showed her maternal instincts which even reflected unknowingly in her works. It was her tenderness which appealed to me. The suppressed maternal love for one of her dead children was the feeling which she couldn't express otherwise but I could feel it very strongly in her sculptural creations in the workshops.

Figure 29 (middle) shows the fragility of David who had to hold on to a stick for his balance and his struggle to maintain the same for his dignity. The sculpture represented him standing at a doorway supporting himself without his stick, leaving behind his identity and past life and making an effort to move forward and come out in the opening. The deterioration in his condition was inevitable. The support he required now was much more than physical. Figure 29 (right) is a sculpture which exemplifies courage of one of the participants, Gloria. I realised that she was fond of doing intricate embroidery works and knitting before she was diagnosed with dementia. But during the sessions when she was creating her sculptures, she realised she could still do the things she gave up. The threads of her stitching connected with the threads of her past life. Even though her health was deteriorating, she gathered considerable courage to make significant changes in her attitude.

Figure 29: Freestanding terracotta figurative sculptures

Nelson's attitude made me realise how simple things in life can give great pleasure. His difficulties in understanding things now made him dependent on others. This affected his thinking, feelings, mood and sometimes behaviour which could be seen sometimes in my sessions. He sought contentment in small and simple things contributing to his current personality. In the case of Jane, who by nature was a perfectionist and tried to hide her shortcomings which I recounted in the sculpture, this participant was in denial about having dementia and claimed her existing abilities were far better than those of her age and condition. Her inner tussles were obvious especially when she expressed her frustrations of not being able to remember as before and then abruptly changed the subject.

Another sculpture represented Gary who always tried to find logic behind each activity he was involved in. He had so many questions for others, which acted like a façade and diverted people from asking him anything. But I sensed how nervous he felt about his condition. In reality, he sought answers for the sake of finding a logical solution to his condition. My creation in clay reflected this exterior persona in the structure of his body with a hint of discreteness on his face which I had noticed. In another sculpture, I tried

to show Oscar's transformation from his hesitancy to believing in himself. This person was always indecisive and reluctant to start anything new in the sessions which was mainly due to his state of dementia. He expressed self-doubt, worry and anxiety indicating no self-confidence. But as the session progressed, he engaged more in his creative works. He became a completely different man - much more relaxed and he enjoyed being in the group. My sculpture showed this very typical aspect of his nature, stepping into unfamiliar territory and not withdrawing out of the fear of the unknown.

Production of digital sculptures

While making the sculptures in clay, a feeling of closeness built up with each person and the impression of their personality which I tried to portray. This made me think of using other processes of sculpture-making. By the time I started with the digital methods of making sculpture with participants at the sessions in the Beaney House of Art and Knowledge in Canterbury, I found a shift in my interest too. This change allowed the same pattern of creative working but at the same time discovering the gradual shifts from manual to digital process in my thinking and reflecting processes.

Within the realm of digital technology each method has its own attributes in creation, production and presentation of any work. Therefore, my questions were how to approach my ideas and realities of the participants visually using digital methods and which one would be more effective for my expressions. This transformation of sculpture-making from completely handmade to computer-based consciously shifted the reflective and intuitive qualities of my art practice. I wanted to express through a blend of variety of methods and not any singular process. Previous experience of making 3D modelling became the starting point. I wanted to create the free-standing figures of the same participants once more but this time with the help of references. For research purposes, video recordings and photographs of the sessions were available to me and I was able to extract the images of each participant at different angles which were appropriate for realistic modelling purposes.

Shaping the human body offers many more challenges compared to other 3D objects. The biggest challenge was to create a virtual model which would be as accurate as the real person using Autodesk Maya software. The 3D construction started with polygon mesh model of each participant with the exact proportions taken from photographs. The process was very orderly using the digital tools of constructing the shapes first and manipulating them later to give more details. The position of shoulders, arms, neck and head were carefully done to show the participants' natural posture (Figure 29). One participant was shown holding his walking stick and another with hands in her pockets. However, I made an attempt to make few changes in the facial features mainly to keep them anonymous so that the faces were not identical to them. Some alterations were

made while making the shape of the eyes by stretching the outer and inner corners of the eyes. The shape of the nose was also manipulated by shortening, lengthening, widening or narrowing.

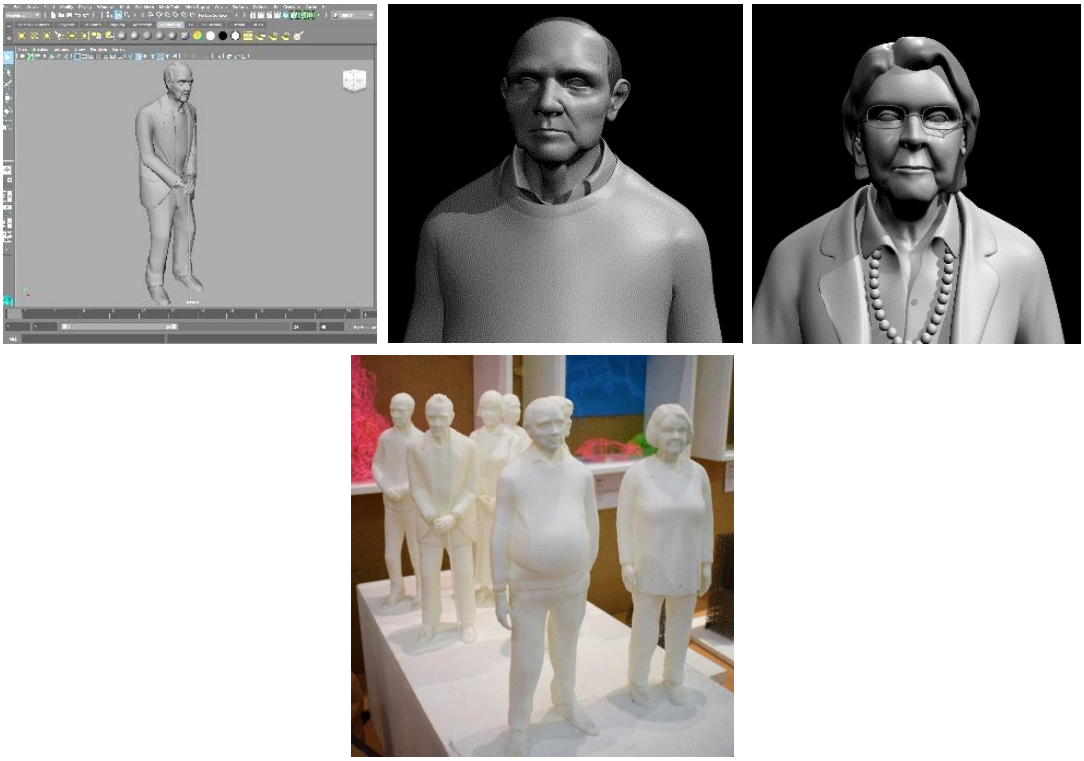


Figure 30: 3D modelling in Autodesk Maya (top left), close-ups of the models showing features and details (top middle & right), free-standing 3D printed sculpture (bottom)

The next stage was to prepare these models for printing and the .obj files of all models had to be saved as .stl files. The mesh were checked using Autodesk Meshmixer software repairing and removing any issues. The models were produced in acrylonitrile-butadiene-styrene (ABS) which is an opaque thermoplastic polymer using Fused Deposition Modelling (FDM) method by LBD Makers 3D printer. White colour was chosen keeping in mind the possibility of a colourful background for the display in an exhibition (Figure 30).

Expression through animation

A sculptural form in its totality does not just exist by itself and depends a lot on the surrounding space, which has an important role to play in its intended depiction. L.R. Rogers once said, “There are many different ways of occupying, enclosing, articulating, and extending into three-dimensional space which sculptors may exploit. Impacting into surrounding space is one, but only one, of them” (Rogers 1983). The spatial relationship sculpture seem to have with its surrounding is sometimes integral to the ontology of sculpture. The tangible actuality of sculpture depends on the exposure of its external space as well as the concealed inner experience within the form. Therefore, the

placement of sculpture within a space allows processing of the external world and consequently the sculpture becomes a means to engage physically and perceptually.

These thoughts made me look at the digitally printed white free-standing figurative sculptures and I realised these were very static and did not do justice to the portrayal of the participants in the surrounding space. I could not sense their physical presence the way I did while working in the sessions with them and the connections which built up in a particular time and space in the *Learning Lab*. The motionless sculptures made me conscious of the *need to make connection with the* journey of creative self-discovery and self-expression. The issue to bridge this gap questioned my art practice – "In what ways could I communicate personal narratives that existed outside of language and link up with three-dimensional forms?"

The surrounding space became very significant to create an environment for the figures to express the very essence of the participants' physical presence. One possibility was to enhance the meaning of each sculpture with a suitable placement of the work for display. This provided me with an opportunity to visualise ways of presenting my personal narratives artistically. So how could I show the spatial relationship of the sculpture relating with the emotions I experienced?

I approached my art practice with an attempt to create an alternative space where I was the narrator. The virtual space is where my thoughts started taking shape. I felt the need to interpret my feelings as a visual conversation where the moving images on the computer screen would reveal stories about each participant. The requirements of the space were according to each sculpture representing a particular participant. Themes for each of them were prepared which I found constantly interchanging between reality, metaphor and insight.

There were two ways to metaphorically look at time and space – first the participants were in motion and time was still and second the participant was still and the time was moving. I found it very difficult to balance the time and space already experienced with the existing time. The memories of the participants clashed with their present state. Their past reflected in their present life and on the other hand their "being in the moment" was the absolute reality. For me what really mattered was where they were now and whatever was in their proximity.

The 3D virtual models of the participants I created earlier were very detailed and realistic. The ideas which I started building did not require so much detail as I wanted the surrounding space to be more dynamic narrating accounts of participants visually. My intention was to emphasise their personalities, what was inside them rather than the external features through the display of moving images. This led me to conceptualise the stories of each participant for 2D vector-based animation. I realised that

subconsciously there were trails of thought in my memory centred on each participant creating an animated effect for me to pick up spontaneously and execute.

I explored symbolic representation of my thoughts informed by my memories of the sessions. The thematic concepts were for construction of stories which allowed me to deconstruct and reconstruct from memory the resemblance of the appearance of the participants and personalities. Everything had a meaning linked with participants' lives and required a conscious thinking process to achieve clarity and minimalism in the visual outcomes. The first stage was storyboard, animatic and making graphical representations using Adobe Photoshop of the sequence and the next stage was post-processing work done in Adobe After-Effects. The seven different animation styles I created evoked personalities of each of the seven participants. It was meant to be a visual diary and thus there was no dialogue or sound effects.

The colour palette included the participants' favourite and preferred colours which I had gathered from their interviews during the sessions. The female participants preferred lavender, pink, sky blue, magenta and red. Male participants on the other hand showed preference for blue, yellow, brown, white, teal, peach, wine colour, coral and olive green. There was a possibility of the colours reflecting their personalities but I was looking at the significant association of these colours in their lives. An example is the colour lavender - a dominant colour in a painting hung in the living room of Amanda's house where she spent most of the time of her day. Another example is navy blue – colour of Oscar's woollen sweater that he liked to wear everyday but his wife hated it.

My work on the storyboard started with a still silhouette of the participant, in which I wanted to slowly unravel the different aspects of what made up that person in my animation. I conceptualised the themes graphically highlighting my understanding of the person and allowing my imagination to represent abstract symbolism for these concepts. The experimentation with movements and effects enabled me to represent this exploration of presenting their condition and present life. But most importantly, it led me to use the animation for another purpose besides the film on digital screen or as a projection. The aspect of movement in animation made me think of using sensors to trigger the start of the animation almost the same way memories triggered responses in participants. For this purpose, the animations were made of shorter duration to capture viewers' interest.

I used key-frame animation techniques and imported images created in Photoshop from the ideas on the storyboard. The process behind making one of the animations is shown in the screen shots of Photoshop files and After Effects project file (Figure 31).

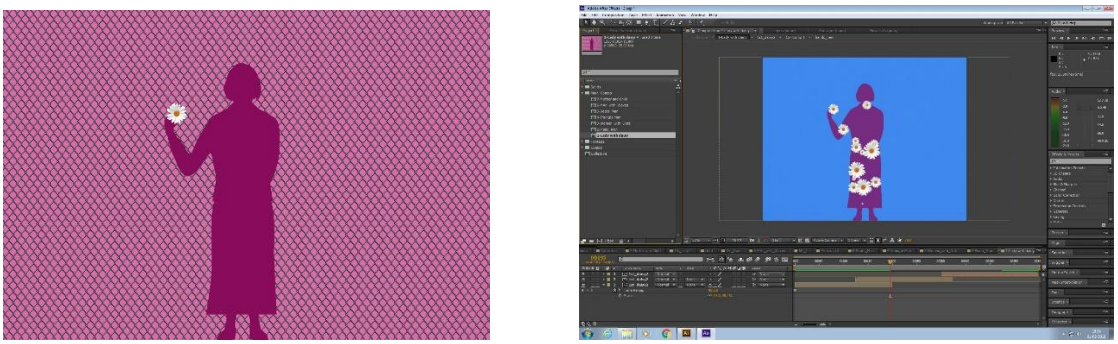


Figure 31: Graphic representation in Photoshop (left) and animation in After Effects (right)

The first animation presented the story Gloria who was very fond of flowers especially daisies. A few days before the sessions started at the *Learning Lab*, she had an accident and broke her arm but was very determined and managed to do her works with the good hand. The transformation that I saw in her is depicted with the change in background colour from pink to blue and the movement of her broken hand holding a daisy slowly covering up her existence. The second animation depicted Oscar who had expressed his fondness for music when young and played a piped organ. Now with the condition of dementia, he manages to play a simple keyboard and he is gradually losing the skills. Merging the shapes of organ and keyboard, I showed the merging of his past and present and the keyboard's lines extending towards him metaphorically connecting him with his passion for music.

In the third animation, the silhouette of Jane showed distortion and changed into floating wavy lines depicting her nervousness inside. Though she experienced the symptoms of dementia, she was determined to fill her life with all those things which would give her pleasure. These pleasures were symbolised as colourful dots of her favourite colours - magenta, pink and red filling up her shape. Nelson whose artistic expressions were very simple in the workshop sessions was represented in the fourth animation. His attitude in life was also similar - to keep everything very simple. The silhouetted figure would transform into simple geometric shapes of his colours – blue, yellow, brown and white slowly transforming him and the surrounding space making an abstract pattern. The next animation was about David who was very fond of anything nautical. The background of wire mesh would change into waves and different shapes and sizes of boats. Slowly the figure would also vanish and the whole screen would fill up with boats and waves. This participant had mentioned frequently in the interviews about his inability to go out on his boat as if that was part of his existence, and what he was made for.

The sixth animation presented the inquisitive nature of Gary. His short-term memory-loss made him repeat the same questions quite often resulting in his getting more confused. By overlapping layers of wire mesh moving in all directions I created a chaotic background depicting the chaos in his mind. Simultaneously, the posture of the rigid standing pose would also change to more relaxed position opening up the arms and

resting on each side of the figure as he let go of his condition. In the seventh animation I represented Amanda who was very fond of the theme of “mother and child”. Love for her dead daughter which she expressed in her works and her choice of topics in my sessions reflected her fixation. It was not just the mother's affection but also the child's which was important to show here.

The seven animations representing seven participants were ready to be used for the next stage of my work. As I started thinking of presenting all my works in an exhibition, I wanted these animations to be part of the 3D printed sculptures I created earlier. A common practice was to play animation in a loop on a screen or using a projector for the purpose of display. I knew I was going to use computer screens to play the animations but I did not want it to play continuously in a loop. I wanted to use sensors which would detect a person in front of the screen and start playing the animation. Once the viewer moved away it would stop playing and return to the static starting point. The whole process was designed to be interactive. The main idea was to represent the way creative engagements triggered emotions and memories of the participants during the sessions which I encountered so many times while working with them. Using the sensors would enable to recreate that transition, opening up a space which reconnected them (presented as physical sculptures) to the part of their life (as shown in the animation).

To integrate these features in the final display, the sensor technology was programmed accordingly with the help of a collaborator who developed the program to run it. This was my first attempt to incorporate this kind of technology in my work. The hardware used was Arduino Uno Board and Ultrasonic Ranging Sensor. Arduino Uno Board is a microcontroller, programed to sense, and control objects in physical environment. The board has fourteen input and output digital pins and programs from personal computers are loaded via USB port for it to function.

In the first stage, the programmer did programming with Adobe Director Software using its inbuilt scripting language called Lingo. With the help of a driver, the USB port was converted into a virtual serial port on the computer. Director reads the input from the USB port emulated as serial port. Ultrasonic Ranging Sensors were connected with the board which had a program installed to run the sensors sending output through USB.

After the programming, the Arduino Uno Board was connected to USB port on the computer and then to the sensors having four wires. I positioned the sensor in front of the plinths so that it could detect any human presence. The same setup was done for seven animations to be played on seven computer screens. The Device Manager on the computer screen indicated which port was assigned and accordingly the application had to be run. Every time a person came in front of the sensor the animation would begin to

play (Figure 32), otherwise it would show the still image of the silhouette of a person with a background of wire mesh on the screen.

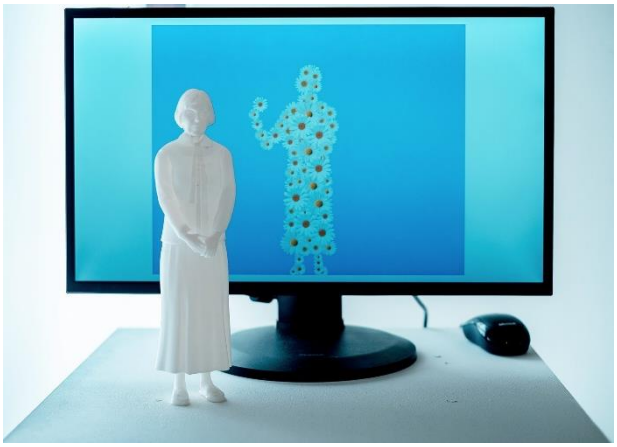


Figure 32: Setting up of sensor along with 3D printed sculpture and animation on computer screen for exhibition purpose

5.5 Transition from representational to abstract forms

After the creation of sculptures during the sessions at the *Learning Lab* I frequently recalled the shared artistic interactions with the people with whom I worked rather than their appearances. The simple and ordinary things, which occurred during the sculpture making sessions, remained in my memory and I wanted to transform these into something extraordinary in order to give greater significance to the participants. I started visualising shapes instead of the person and accordingly rearranged my artistic approach. I felt I was able to express this with much deeper understanding of the qualities of my participants and their personalities to portray them far away from the time I was with them.

Four months after the end of the study, I started making sketches, which turned out to be totally abstract. I have always created figurative sculptures and this was my first attempt to work with abstract forms still associated with a person. I felt I did not have to put in too much effort for my visualisation. Interestingly, my sketching and notes started reflecting these ideas in fragments. The final sketches were abstracted representations denoting each participant to be created as virtual models and ultimately physical models. Each sketch started as an intangible impulse of thought germinating into visuals on the sketchpad. Figure 33 shows an example of the work process of one of the sculptures.

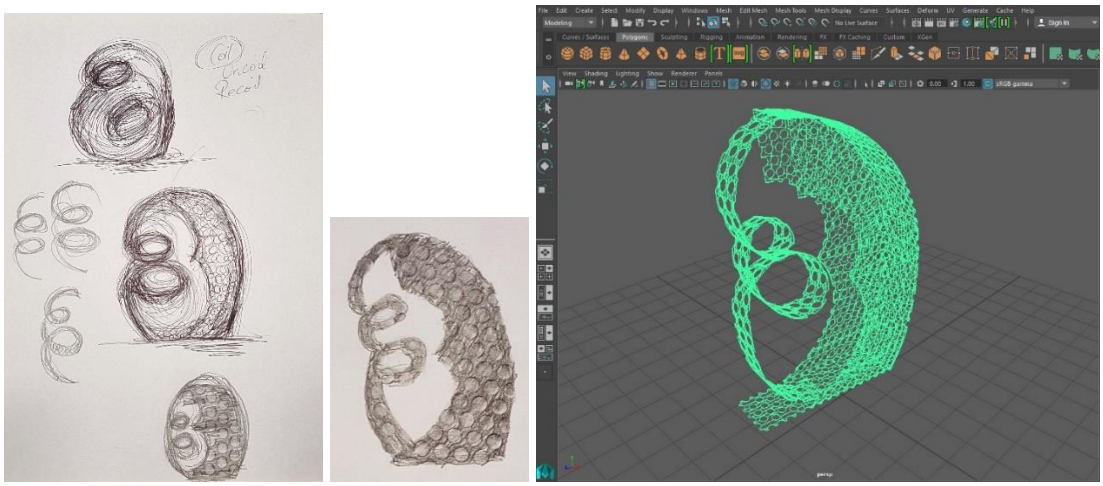


Figure 33: Initial hand drawn sketches (left, middle) and 3D virtual model of sculpture (right)

To create the 3D virtual models from the sketches, I used Autodesk Maya for the polygon models manipulating the digital tools to get the accurate forms I had visualized. Playing with materials was the next stage and I decided on using the perforated steel sheet for the physical model. I had previously created physical sculptures with various metal wire mesh and incorporated the same effect with the digital sculptures. I like the see-through quality of the holes in the mesh and the reflective surface of the metal.

After the 3D models were ready, they were divided into different parts which were to be laser cut later. The parts of each model were drawn and prepared using Adobe Illustrator (Fig 34 right). The files were then sent to a Laser Cutting Service Company to cut the stainless sheet in the desired shapes. Once all the parts were ready, they were joined together using a gas welding process and the physical sculptures were ready for display.

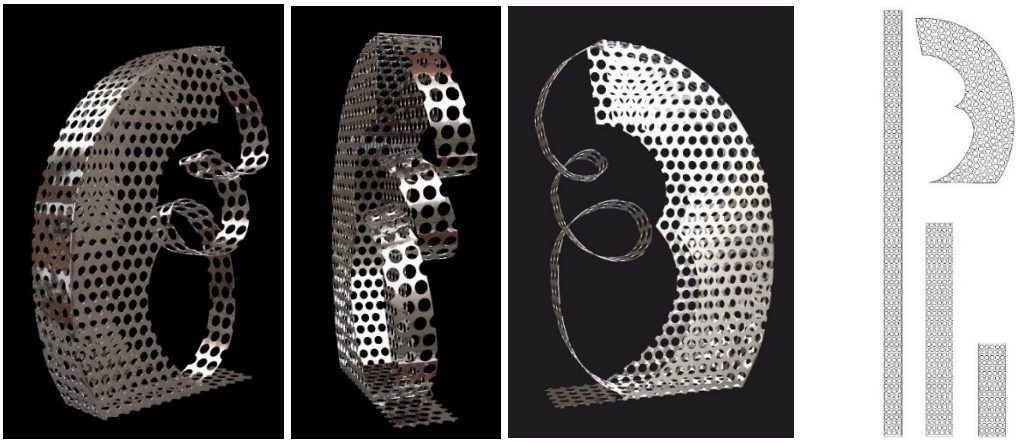


Figure 34: 3D rendering of virtual sculpture at different angles in Autodesk Maya and design for laser cut in Adobe Illustrator (right)

Concepts behind sculptural creations

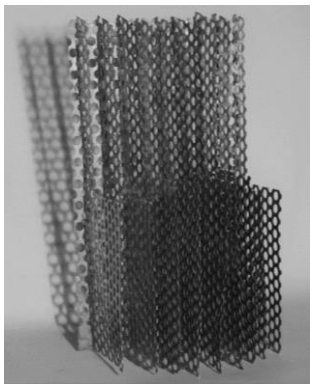
The sculptures I created were my emotional responses to the exchanges of personal information in the creative sessions. Each sculpture was made in honour of a participant

I worked with, reflecting my awareness of our close association. I realised this while I was involved in the co-creation of their sculptures. I questioned myself "What is the first thing to remember about him/her and how can I describe it?" I purposefully tried to analyse my knowledge and experience, to achieve a deeper meaning and insight, not merely think about it. This developed a different approach of metaphoric interpretation which I carried on using in my art practice. The thoughts led me to the visualisation, creation and final production of sculptures. The conversations I had with them held a lot more meaning which I wanted to include in each sculpture I created.

An example of my work is *Sustained notes* (Figure 35a). This sculpture expresses a male participant's inability to play the organ anymore but at the same time the impact it has left on his life. The rectilinear form of the organ I created presents an arrangement of visible lines and hollow space. It is made of different sizes of metal sheets welded together giving an impression of a pipe organ. To me it seemed almost similar to the instances from his memory he shared about his music related to his identity.

Abstract sculpture *Reverberation* (Figure 35b), is my way of presenting one of the participant's repeated attempts to remember moments from his past. Every time he made an effort to share with others, his confidence gave way and often he stopped talking in the middle of a conversation. Repeatedly the thoughts built up like coils of what existed in his mind and uncoiled when it ceased to exist. The constant unravelling of incidents from his past in the sessions, relieved him for a short time from the frustrations he experienced. This I expressed by depicting it in the shape of a twisted metal sheet as an extension of his past events which he remembered. Temporarily, it distanced him from the person he had become now with the condition of dementia.

In the sessions, one female participant held a deep interest in the theme of mother and child and my sculpture *Carrying you in my soul* (Figure 35d) is dedicated to her. This sculpture was based on my feelings which had moved me deeply while I worked with her. It was an unconscious effort to create this form and came by natural instinct. The emptiness felt within a mother after the loss of a child is an enclosed space where an imprint of the child's memories remains.



(a)

Me: Do you still play organ?
He: No. I stopped years ago. I now have what you call a keyboard.
Age 81
The day he played organ, his girlfriend would pump. That was years ago when he was very young. It put a smile on his face when he shared this with the group. Was it the thought of her or the happy moments spent together? Maybe it was the divine music he played in the church.

(b)

Me: I would like you to make something you like. Something that you could easily relate to.
He: Oh. I can never make anything. I have no vision, I have never done anything creative.
Age 79
He unwrapped himself. Layers of his experience, he unfolded them. Kept it aside. And then he drew. He drew the flowers of the seasons, how they unfold with time giving happiness to all. This is how he wanted his works to be.

(c)

Me: (handing a cup of tea) Do you want anything else?
She: Bring it near (indicating the flower vase in the middle of the table).
Age 101
She liked to look at the curve of the petals. The colours of each flower in the posy. The coloured pencils in her hand. "Interesting" - that is what she would always say.

(d)

Me: You have been looking at it (picture of Barbara Hepworth's Madonna and Child) for a long time. What is it?
She: It looks very real. 'Child and mother', 'Mother and child'. It's so wonderful. Mother's hands and baby's face.
Age 93
She held the paper in her hand looking at the two people. The child held in the mother's arms. But she was looking at the child clinging to the mother. Why is it so familiar? She puts the paper down and slides her fingers on the child.

Figure 35: Abstract sculptures in steel with connotations

Posy in a vase (Figure 35c) represents a female participant who loved to draw the flower arrangements kept on the table in front of her, to the exclusion of everything else. It was

as if a ritual she followed every time she came to the sessions. She hardly communicated with others and spent most of the time drawing with coloured pencils before the actual session started. It was obvious that she enjoyed what she was doing. It made her much more relaxed afterwards and she willingly accepted the physical involvement of making sculptures. The impression of a posy is my dedication to her. I felt as if the flowers validated her identity and every time by drawing the posies she perhaps was able to leave a mark at that moment in her life. Things which she could not remember from her past, did not matter anymore.

Depiction of *Yoga* poses

The change in my art practice was gradual and it continued to motivate me to create my sculptures differently. The metaphoric representation became integral part of my thinking process and embedded in my art practice. The series on *Yoga* poses on which I had worked as a subject for two years, now appeared to be much more than the positioning of the human body in different *Yoga Asanas*. It became a metaphor for life and an act of balancing the external and the internal. Every time I thought about the postures I questioned, what shapes are coming up in my mind? I could visualise the angles, the twists and bending of the human body as if they were magnified surpassing the human form as a whole.

In the first stage, I created the sculptures in clay (Figure 36) with an attempt to reveal the unusual body positions capturing the beauty and flexibility *Yoga Asanas* allowed. I selected four postures: *Uttanasana* – intense forward bend pose, *Vrschikasana* – scorpion pose, *Ardha Uttanasana* – half forward bend pose and *Bhujangasana* – cobra pose. The forms were constructed with precise contours suggesting curves, twists, folds and bends of a person practising *Yoga*. In the next stage, I prepared two-part plaster moulds of each clay sculpture and applied a mixture of resin, catalyst and accelerator with fibreglass mat on the inner side of the moulds (Figure 32). After drying, the pieces were joined together and I spray-painted it with red colour, which I consider a very striking colour instantly evoking a strong response. For me, culturally, red is captivating with a hint of excitement and zest for life while artistically, it demands attention.

My earlier experience of working with see-through materials enthused me to try the same on these solid but hollow inside forms. However, this time I wanted to have the effect only at certain parts not throughout the fibreglass sculptures. With a drill machine, I created holes on the surface of each sculpture and the size of the perforations depended on the drill bits. Figure 36 shows the process of making one of the sculptures.

Figure 36: Process of making fibreglass sculpture

While I was engaged in the process of producing these fibreglass sculptures, I found a similarity with the digital process of sculpture-making. The plaster moulds could be used repeatedly to make casts of the same sculptures. The virtual sculptures also have digital files as "moulds" which could be produced in multiple ways. With these thoughts in mind, I started with the creation of polygon models of the poses using Autodesk Maya. Use of digital tools gave me more control on making the structure and the perforated surface was much more accurate as I could lay a grid to edit the polygon mesh and assign invisible faces to create equidistant holes easily.

The virtual replicas of the physical sculptures were created not merely as reproductions but for two other purposes. One purpose was a turntable animation of the sculptures placed on plinths using Autodesk Maya. Three-point lighting was set up and camera positioned accordingly to enable 360 degrees movement. The duration was 1.27 minutes with approximately 30 frames per second. The frame size was set at 1920 X 1080, 16:9 aspect ratio resolution. After rendering, the targa image sequence was saved which was exported to After Effects and then compile rendering was done to get the desired effect (Figure 37, left).

The other purpose was to use the models for AR application on Android tablet to view the virtual sculptures in real space. The .obj files created in Autodesk Maya were unwrapped and UV texture coordinates were edited using UV Layout software. It was imported again in Autodesk Maya and textures were added. The 3D models were

triangulated as it helps rendering the model as vector rather than a structure or an image. Knowing the triangles, which cumulatively make the whole model, makes the job of rendering the 3D model very easy as it adheres to the principles of OpenGL ES. And a most essential part is the Texture, which gives a lively touch to the model, is wrapped up on the model. From this stage onwards I took the help of a Programmer to develop the AR application.

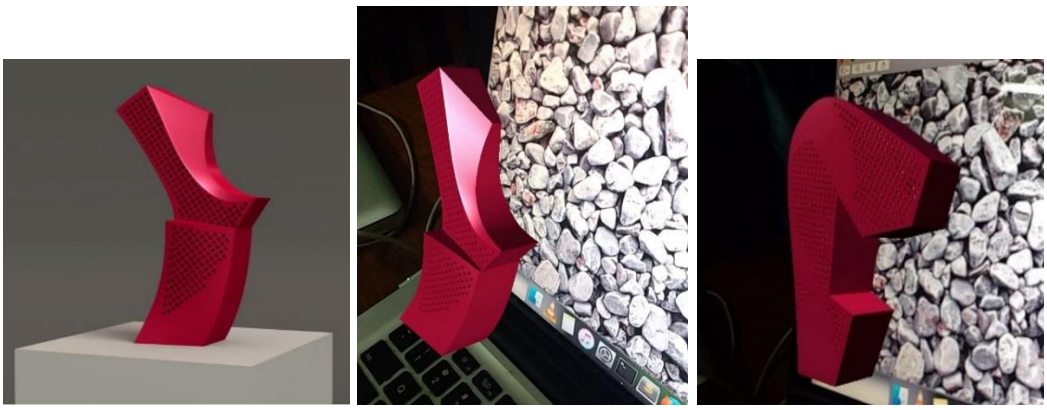


Figure 37: 3D animation (left), AR application showing sculptures (middle & right)

The programmer converted the .obj file 3dmodel into .h file, using a script, which is essentially a header file for C++. This script converted the 3D models into triangles storing the information about triangles in the .h file and later used by the NDK (Native Development Kit) code to convert triangles into model via OpenGL ES. To render the model on the screen the Android framework used this .h file which included the texture of the models. A NDK application written in C++ utilised the .h file which was then compiled into .so binary file. The .so library can have a compilation of a large number of images or 3D models. However, the size of one model has certain limits and has to be proportional to the speed or capability of the underlying processor on which NDK code was compiled. The programmer then prepared the SDK (Software Development Kit) Android application and NDK code compilation in .so library was merged into the SDK project. The SDK application made call to the models at each touch on screen and likewise texture image was also used with different 3D models. Figure 37 (middle & right) shows the results of the application.

Abstract sculptures in wood

An artist's conceptual idea is personal and often the material through which it is expressed contributes to its identity. I wanted to seek more options and wood was the best alternative material. Wood is a natural material in comparison to most of the manufactured materials I had been working with such as wire-mesh, perforated steel metal sheet, fibreglass, etc. I wanted to find out how much the material would influence my practice. Would it affect the transition to abstract representation of my ideas?

I selected small pieces of seasoned *Sheesham* wood, also known as Indian rosewood, for carving and worked on a series of abstract forms. In some ways it appealed to me as a metaphor for the relationship with the natural world; no matter what we do there are so many things which are best left as they are, in a natural state. The ideas for my sculptures originated from my contemplation of the passage of time, all those moments I spent in the company of my participants. It was a temporary phase but as I drifted away from them I could visualise the essence of our connections.

As I carved out each form (Figure 38 top) they turned out to be minimalist and without any superfluous information. There were some inexpressible qualities of my experiences in the last three years of the interactions with people with dementia. Themes for my wooden sculptures reflected this and included spirituality, transformation, mortality, healing and resilience. But after I created the works I left them untitled, this was because I wanted viewers to find out their own meanings when the sculptures were later exhibited.

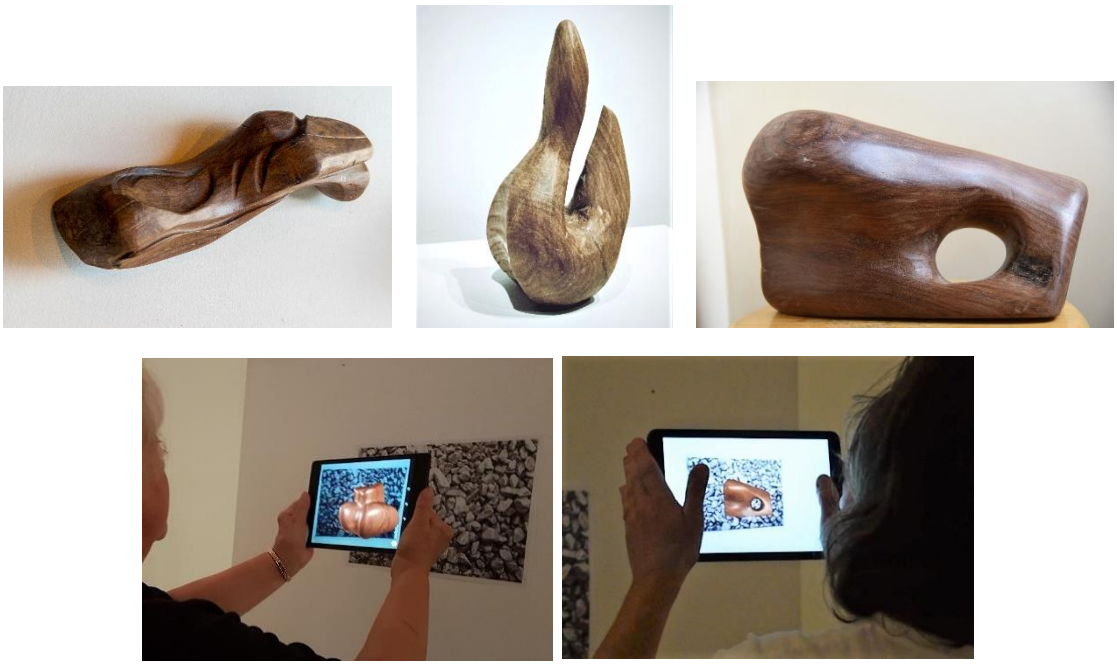


Figure 38: Abstract sculptures in wood (top), AR application showing sculptures (bottom)

As I have done with most of my creations, I have tried to bridge the gap between the physical and virtual space in the process of sculpture-making. Therefore, the next stage was virtual representation of the wooden sculptures (Figure 38 bottom). Initial modelling was done on Autodesk Maya software and followed the same pattern of making changes in these models to work with AR application on Android tablet (the process was the same as used for the fibreglass sculptures with the help of a Programmer).

Visual synthesis in sculptural installation

For research purposes, I had collected video recordings of all the sessions specially focusing the camera on the participants making sculpture. I found the movements of the hands very interesting and I extracted those footages where the participants were working using different materials and tools. Later I did the editing using Adobe Premier Pro and had no sound effect. The duration of the film was three-minutes and it was without a beginning, middle or end to the narrative. The film showed continuous hand movements which I wanted to combine with my sculptural forms. My intention was to interrelate bodies of work to give the moving images of the film a new meaning.

Compositing the film in Adobe After Effects included manipulating the tones, contrast, brightness of the footage by changing settings of *Levels, Curves* and *Tints*. We used the plugin - *Roto Toon* to give the *Colour Effect, Find edges, CC plastic*. Apart from these, minor adjustments of brightness, contrast, and colour balance were done as required in different shots to match the look of the shots. We changed the rate of playback of the frames using *Posterize Time* to give a jerky effect.

My ideas fitted well for an installation work having the video as the main component running on a loop. Exploring different methods of presenting the film, I decided to do a projection so that it could be seen in a bigger size than the computer screen. Instead of projecting on a wall, I created an abstract sculpture using aluminium wire mesh to be suspended and the video to be projected to it. Between the surface and depth of the form was a space that was visible but not reachable. I felt it had the quality to transform into something imaginary and in its wholeness it amplified a connectedness of the space within us with the external interventions in life. Metaphorically, a space was created in this sculptural installation for both to co-exist and the moving of hands filled this space.

Figure 39: Sculptural installation

Each movement of the hands projected over the sculptural form was unique and the jerkiness in the video created multiple effects as the projection fell on each layer (Figure 39). It looked very abstract, as the images became fragmented in layers. I felt as if the video projection on the wire-mesh sculpture was embedding in its layers the contemplation and reverie of the participants which they experienced. The association

of my memories with their experience gave a new meaning to this installation bringing two mediums together.

5.6 Structure and constraints of co-creation

The concept of working together with participants came across for the first time when I started planning my main study. The collaboration of participants working with me in creating sculptures became a part of the research methodology. The values of co-creation could only be recognised when two or more people come together to do practical work collaboratively. The results of the interactions with participants have been explained in the last two chapters whereby the artistic outcomes gave ample evidence of the mutual influences of co-creativity. Overall, I can say, co-creation had affected me in the following ways during the sessions:

- Emotional receptivity and expressiveness
- Engagement with sculpture-making processes.

However, there is much more to this, which has deeply affected me at different levels besides the role of artist and researcher: as an observer, explorer, experimenter, seeker and last but not the least as a human being.

The nature of inquiry of sculpture-making processes involving people with dementia was framed on creativity and ways of learning it. However, when art is created collectively, it depends on shared interpretation of ideas and decision-making. The emphasis on creativity was more on collaboration. A possibility arises here to find out any factors that would influence the flow of creative thinking in sculpture production of people with dementia. According to Kitwood's model, six psychological needs of people with dementia should be sustained for creativity to flourish and *love* being central (Lee and Adams 2011; Mitchell and Agnelli 2015). These are – inclusion, attachment, comfort, identity and occupation (Kitwood 1997). *Inclusion* could be achieved with the feeling of belonging and being part of a group. *Attachment* was essential to building a relationship within the group as a result of regular meetings in the sessions. Affection, warmth, compassion and care in our behaviour provided *comfort*, which is another feature. *Identity* was equally important which could be ascertained by the relationship built with other members in the group and the sculptural outcomes giving them recognition. *Occupation* facilitated participants to get involved in meaningful activities of sculpture-making, transforming their expressions into sculptural forms.

The above factors are essential for a person-centred approach in a social set-up. However, there is another factor, which has a cultural connotation and needs to be acknowledged i.e. *alignment*. I feel alignment is a kind of arrangement, which connects a person with his/her passion, value, and life's purposes with another person. Grouping

them together gives a balanced way of thinking and behaving. This brings forward the individual, relational and collective conceptions of self, experienced through art activities. In the collaborative environment of the sessions, working collectively had more impact on creativity compared to individually.

However, all these depend on the effective communication among group members, which could act as a stimulus to creative thinking as well as to the outcomes. Candy and Edmonds have written in detail about co-creative activities involving art and technology. They have described an approach to modeling co-creativity based on case study data. Six features indicated the styles in communications based on their project:

- "whether openness of communication was adopted by both parties or was restricted to one or none;
- whether the relationship existed only for the residency or was ongoing;
- whether the language as demonstrated by terminology used, was shared or restricted to one or other individual;
- whether the exchanges took place in a continuous manner or only intermittently;
- whether there was mutual flexibility in respect of the way communication was used;
- whether the process of arriving at an agreement involved affirmation of each party towards one another or was an agreement to differ" (Candy and Edmonds 2002).

These features are very relevant to my research as most of these outcomes were combined efforts of the people involved. The importance of communication, building personal relationships, constant interactions verbally and non-verbally and sincerity in delivering their ideas were the core of the co-creative process. However, there was one thing which I found was difficult to establish - who was the final decision maker? Was it I who indicated when a work was complete? Was it the participants who declared the end of their creative pursuit? I was the one who showed them ways to engage creatively but it was the participants, who held the implicit control, although it depended on their condition at a particular time and space.

Nevertheless, the process of co-creation attracted those participants who were uninterested or unfamiliar with what I was teaching them. Trust and respect are important for the process to be successful and my cultural disposition had an added advantage. I found it easy to synchronize with their thoughts. On the other hand, sometimes participants completely disengaged from the activities and I let them take their time to return to normalcy. Dementia can make a person very anxious, nervous, fearful and sometimes depressed which could be intense or disproportionate. Following are some of the reasons behind their not taking interest (Marin 1990; Alzheimer Europe 2009) -

- Lack of motivation to do anything or start anything

- Activities may not be appealing as they find difficulty doing as before
- Problems facing while doing a task may indicate their inabilities
- Not wanting to show others their incapability
- Lack of incentive to carry on any work

However, collaborative creativity adopted in this study functioned very well on reflections and responses in the group. Discussions in the group with participants and volunteers focussed on multiple subjects relating to their art activities. Analysing the process usually brought out what was created and by whom. This was always followed with praises or feedback that led to further discussions on the meanings behind the works and possible interpretation by everyone in the group. The last thing was suggestions to carry on with the work to completion. To make all these communications more effective, visual and sensory interactions (already discussed earlier in this chapter) were given equal importance as verbal conversation.

During the main study, I came upon the question on co-creation - how effective was it for the participants? I realized that once the participants have shown an interest to work, the success of co-creation depended on deepening their engagement with arts. It has turned out to be a very active and expressive way of participation in art and its creation. Hence, there is a question which arises to establish the authenticity of the sculptural creations by the participants. There is no measurement to point out how much input has come into the works from the people involved. My input was giving directions from the conception of ideas to production of sculptures, giving incentives to think or create differently and problem solving. So who has the ownership of such an artwork? The credit of the sculptures created in the sessions goes to the participants because of their self-initiated ideas which were followed strictly till the end product.

Significant challenges remained in the implementation of co-creation because of the condition of the participants over which I had no control. One of the powerful effects of the co-creation process was to make them think a bit harder about sculpture and recognise how their thinking was processing ideas. This is where I had to take control as an artist and the next question on co-creation arose - how co-creation affected the artist involved and what factors influenced his/her art practice?

As an artist, I acquired a much wider and deeper awareness in my practice, finding new ways of interpreting which I have already discussed earlier in this chapter. Co-creativity has the potential to support critical thinking and artistic intentions through collaborative learning. Thinking and learning had to be mutually experienced as “they raise questions, evoke connection-making, and in many ways transform the shape of inquiry” (Tishman 2006).

Through the co-creative practice two inherent key areas were identified which relied on strength and difficulties during the sessions. They oscillated firstly between process and the product and secondly between being creative or acquiring knowledge. There have been debates on the importance of process rather than the outcome. I had to be critical of my own judgement and realised that co-creativity actually made an impact on the way I worked with the materials. With the participants, I often showed sculptures as examples first, then explained the process to keep them motivated and interested. They preferred to see the outcome first but my art practice started with the materials. The process of making was my journey of experiences and realisation of emotions. It bore the imprints of layers of exchanges and also the ambiguity and uncertainty. The product on the other hand remained as a final statement allowing artistic vision to be interpreted and bringing the focus back to the process.

Acquiring knowledge is something that is learnt mentally and being creative is more to do with practical engagement. With knowledge comes awareness but if it is not used in practice, does it sustain? In the main study, collaborative learning was linked with collaborative practice, which generated an environment of an active, involved and exploratory approach to working together. There were different phases in the study. Acquisition of knowledge of the behaviour of participants while creatively engaged was required to inform how artistically an idea could be interpreted in a form and vice versa.

5.7 Summary

In this chapter, I have presented my artistic and conceptual enquiry influenced by my engagement with people with dementia. I addressed one of my research questions on how the interactions with participants have an impact on the artist involved. An intense relationship built up with participants while working together and inspired me to bring associated memories back in my art practice. The co-creation process which I adopted gradually affected my creative approach to physical and digital sculptures in representational and abstract ways. The nature of my work now offers much more for the viewers to imagine which emphasises the fragments of my memory, thoughts, feelings and reflections. My sculptures are no longer results of a conscious goal to achieve, they are now entirely intuitive and reflective of what I felt in the company of my participants. The layering of conversations and shared moments become a metaphor for my creations. I consider my sculptures a medium of communication, which has an element of receptivity expressing the intimate nature of the relationships. The strong influence of collaborative learning and practice of sculpture paved the way to an eclectic mix of experiences of an artist as a conscious outcome of involving people with dementia creatively.

Chapter 6: Public exhibitions

This chapter focuses on the reception by viewers of sculptural productions exhibited in a public space. Exhibition gives recognition to artistic creations and acts as a catalyst for artistic ideas and endeavours for both the artist and the viewing public. For an artist, presenting an artwork in an exhibition means opening up a personal space in a public domain; the artist therefore has to consider what the space would entail and offer to viewers experiencing it.

An exhibition serves as a platform to present a story, an idea or a concept within a new context which would be relevant to the public viewing the displayed artworks (Barker 1999). The exhibition initiates a relationship between an artwork and a viewer and, in addition, the experience of viewing art can often lead to the viewer appreciating it or interpreting it according to their own thinking processes (Sutherland and Acord 2007). Viewers contribute to the process of constructing meanings by offering personal reflections and opinions (Wolff and Geahigan 1997). Therefore, in this chapter, the role of the viewer within the exhibition environment takes centre stage.

6.1 Exhibition 1 – *Sculptural Revelations*

The first exhibition called *Sculptural Revelations* was opened to the public at the Front Room gallery at the Beaney House of Art and Knowledge in Canterbury from 16th to 31st July 2016. This exhibition included twenty-eight physical sculptures in different mediums and fifty virtual sculptures created by participants during the main study held at the *Learning Lab* in the Beaney House of Art and Knowledge. As the title of the exhibition suggests, the displayed works revealed stories of the participants' personalities, passions and beliefs. Prior to the exhibition, in consultation with the participants the arrangement and display of the sculptures on wall-mounted frames and plinths were decided, along with any other requirement such as adding colour or changing the positions of their created works. Titles and description of each of their works were prepared by the participants with my support and placed next to their sculptural creations. The participants' works as well as my own sculptures, created during the sessions as a result of interactions with the participants, were also part of the exhibition; these included fourteen physical sculptures and seven animated videos.

Figure 40: Flyer of *Sculptural Revelations* exhibition

Figure 40 shows a simple flyer designed to invite visitors to the gallery with one main visual component of graphical representation of the seven people participating in the exhibition. Figures of the participants were represented in the colours they liked most. The bright orange colour for the background was used to attract attention. The big, clear font style and size of the title were selected to blend with the graphical illustration and were positioned together for maximum attention and appealing. The overall design was approved by the participants. The flyers were put up on notice boards in public spaces, at the University of Kent, and were personally distributed, sent by email, and posted on social media.

Preparation for the exhibition required careful planning which was executed in several stages. Firstly, an overall measurement of the gallery was taken to plan a layout. There were different methods of display for the various kinds of sculptures - wall mounted relief sculptures in frames, freestanding sculptures on plinths, projection of sculptures on walls using projectors and set-up of computer screens attached to sensors on plinths. Lighting was important, as a section of the gallery space had to be darker so that computer screens and slide projection of sculptures on wall were visible. The rest of the gallery space required adequate lighting to enable viewers to see details of each sculpture and read the descriptions.

A layout of the plan (Figure 41) was prepared keeping in mind the position of the plinths and the way the viewers would move through the space. Proper arrangement of display was considered important in order to have a direct impact on the viewers with maximum receptivity of the exhibits along with the messages they conveyed. Similar works were grouped together. Clay relief sculptures and sculptures created using 3Doodler pen by participants were displayed inside wall-mounted frames on two adjacent walls and were

positioned at eye level height. Two separate blocks of plinths displayed participants' freestanding papier-mâché sculptures and 3D printed sculptures. On a small plinth, an extra clay work by one participant was on display. Two short films *Power of the Object* by Jane Milton and *Creative Hands* by Janet Rodriguez made during sessions at the Beaney House of Art and Knowledge were shown on a screen in one corner. All of these displays were on one side of the gallery. On the other side, freestanding clay sculptures created by the researcher were displayed on a separate plinth. Computer screens and sensors were set up on seven plinths where the overhead lights were switched off to make a darker space (Figure 41 bottom right). An overhead projector was used to project a slide presentation of participants' virtual sculptures in the darker area of the gallery space.

Figure 41: Gallery floor plan (top) and exhibition open to public (bottom left), display of screen and projection on wall in the darker area (bottom right)

Qualitative and quantitative analysis: mixing methods

Using qualitative research, it was possible to reflect on the reasons for undertaking this research study - how it represents the topic chosen and positions it in the art world, how feasible and acceptable it is, in what ways it will facilitate other artists doing similar research, what might be the study's significance in forming strategies of co-creative activities, how themes emerge with different meanings and representations. To address these, I had to think in detail about what needed to be asked and why and how these questions would inform a researcher's understanding of the viewer's perception. Therefore, a questionnaire was prepared in order to elicit their response to the exhibits

and to the exhibition in its totality. As a result, a "mixed method" was adopted for evaluation, which means that besides collecting numerical data for collection and analysis, narrative data was also included to address the research questions as the analysis had to be explanatory as well as exploratory (Brannen 2017; Creswell and Creswell 2017). It involved collecting quantitative data from survey questionnaires and also qualitative data from observations, interviews and written explanations in questionnaires. The collection of both data was to determine the combined strength of each in answering the research question more effectively. The purpose was to draw "from the strengths and minimize the weaknesses of the quantitative and qualitative research approaches" (Johnson and Onwuegbuzie 2004; Creswell 2009).

To evaluate mixed method research, I first took into consideration the overall strategy I was adopting for the art practice and its appropriateness in the setting of contemporary art and its relationship between the researcher, the participants with dementia and the viewers. A questionnaire was prepared with closed-ended questions for quantitative data collection and with open-ended questions for qualitative data in order to gain from the respective strengths of both these approaches. The closed ended questions were about viewers' demographics and their ratings of the exhibits which was analysed using Microsoft Excel and SPSS. The open-ended questions were transcribed and independently coded to identify themes using Nvivo software.

6.1.1 Participants' experience

Generally, one of the purposes of having an exhibition is to reach an audience, however, in this research, it served another purpose by involving the participants as viewers. For them, the entire experience of sculpture making as explained in chapter 4 included the process of sculpture-making from inception to completion and the intention was to include the presentation of their sculptures as part of this experience. The earlier responses of the participants, which reflected their viewing and appreciating their creations during the making process, were investigated but not the final artwork in a gallery setting. Part of the main study focused on the production of sculptures in the sessions held at the *Learning Lab* and now their reception of their completed sculptures had to be addressed and ascertained.

As mentioned before, while the participants were engaged in the creation of their sculptures, they were observing, learning, contemplating and then using their knowledge to express their self-initiated ideas in the sculptural forms. The space they were working in implicitly became part of their experience too. There was a possibility of changes in their receptivity of the same sculptures if displayed away from the workspace in a new environment. How far each participant would bring with them their individual experiences and interests as outcome of their involvement in the sessions had to be

established. A few more questions arise here - In what ways would participants' perception of their sculptures be influenced in a different setting? Would their responses be different as a creator and as a viewer?

The exhibition offered the participants an opportunity to see everyone's work displayed together. Some of the participants expressed their first impression soon after entering the exhibition space and some did after having a quick look around. Their comments were, *"fantastic", "lovely", "beautiful", "incredible", "amazing", "so good"* and *"wonderful"*. After seeing the exhibition, they were interviewed about their opinion. Interestingly, each participant had different approaches. One participant, Jane, commented on the entire space, *"I think the spatial effect of putting it up here is marvellous. It's the usual and also the unconventional position of sculptures and sort of sharpness of the colours when light falls on them"*. The light and dark space enhanced the visual effect of the sculptures displayed which was noticeable to the participants despite some of the participants' visual and perceptual problems. Another participant, Amanda, looked at each sculpture as a unique work and did not want to compare at all, *"They are all so beautiful. I do not think one ought to ever choose. Just enjoy it…I think that it would be pity to choose. Because they are all so very, very interesting. Beautiful. Really beautiful."*

Gary commented about the presentation and said *"I think it is fantastic because of the incredible achievement in presentation. Subtly presented without being too much. Nice and non-cluttered, I think everybody was being extremely clever and has done everything with shape and far less with colour."* His comment on colour was also very similar to Oscar's observation, *"I will go for the colourful one. They stand out more than the others because of the colours you can see."*

Gloria and Nelson were happy with the overall arrangement of sculptures and found them *"more effective"* in the exhibition than in the *Learning Lab* and to see how productive they had been, which they did not think at the beginning of the sessions. David was very judgemental and he thought the works were not as professional as the researcher's exhibits, which emphasised -*"Composition and the life within it. Also some kind of activity and movement."* Commenting on the participants works, he said, *"I do not think you can say all are a thing of beauty. But definitely they are a thing of interest."*

Another interesting observation from the interview was on the participants' recognition of their own sculptures. Two participants, David and Oscar, did not recognise their relief sculptures in clay and two other, Amanda and Gloria, their freestanding papier-mâché sculptures. There were two more, Gary and Nelson, who did not remember their virtual sculptures. Interestingly all participants remembered their works using 3Doodler pen and the 3D printed sculptures. One of the reasons could be that both were colourful

which might have helped in their memory retention. Also, participants had taken a longer time to develop their ideas for the final sculptures and therefore processing their thoughts also took longer. Another reason could be that both these processes of sculpture-making were new and challenging and used different kind of tools - 3Doodler pen and 3D printer. It might have worked as stimulus for them to recollect how they did their work.

The sculptures I created (explained in chapter 5) were also seen by the participants. Gary and Nelson were confused and could not recognise themselves but the remaining participants could easily point out the ones which were their look-alikes created in clay. Four participants, David, Gary, Jane and Gloria, recognised other members in the group. Regarding the 3D printed sculptures, all participants effortlessly recognised themselves. One of the reasons could be that the colourful animation on the computer screen at the back provided visual cues to them. Jane and Gloria could remember all the other members and four participants, David, Gary, Nelson and Oscar, recognised at least four other group members.

6.1.2 Viewers' perception

In order to evaluate viewers' feedback during the exhibition, it was necessary to present how the sculptures created by people with dementia affected their perception. Besides the demographic questions, all others in the remaining survey questionnaire were open ended so that the viewers could expound exactly how they felt. The main advantage of having the open-ended questions was the possibility to investigate further. "The possibility of discovering the responses that individuals give spontaneously" are much more in comparison to close-ended questions (Reja, et al. 2003, 161)

I tried to develop a more strategic use of having the open-ended questions at the end of the structured questionnaire. The open question followed a closed question, asking the viewers to elaborate their answers which helped in explaining and expanding the quantitative questions and was very useful in understanding their general experience of the exhibition. Viewers' responses to the open-ended questions were considered for qualitative data and the analysis provided insights into the receptive quality of association of art with dementia.

Exhibiting sculptures in a public place accentuates the role of the viewer within the exhibition environment and the relationship which builds up between the viewer and the artwork (Senie 2008). Viewers are usually from different backgrounds and knowledge and have different preconceptions, opinion and taste. All of these influence their experience. In the *Sculptural Revelations* exhibition, the context of the relation of art with dementia and the information provided in the captions of each sculptural creation played an important role to form an objective opinion although the subjective disposition

of experiencing art was equally important. Besides being aware of the participants' intentions, viewers would possibly add their own judgement. Their interpretation and perception of the exhibits highlighted how they connected with the artist (participants with dementia or researcher) and artwork.

The space between the sculpture and the viewer had to be devoid of any manipulation or influence to cultivate a spontaneous response. There was a possibility that the interactions with different types of exhibits would generate different reactions in viewers. Therefore, a questionnaire was structured to address one of the main research questions focusing on how viewers perceive the exhibition of sculptures created by people with dementia.

Viewers' profile

The exhibition was open to the public for two weeks. There were two kinds of visitors who came to see the exhibition – "purposeful" visitors and "casual" passers-by. Some of the visitors were already aware of the exhibition and had planned to visit after receiving an invitation by telephone, by email or by seeing the announcement on university webpage and social media sites or a flyer displayed outside the gallery. Others were "casual" passers-by who had come across the exhibition during their visit to other gallery sections at Beaney House of Art and Knowledge and had no prior knowledge about it. Some of these visitors were tourists in the city and came out of curiosity.

Approximately 1,100 visitors saw the exhibition, out of which 598 gave their consent to complete the questionnaire after seeing all the exhibits. In the first part of the questionnaire, demographic details were obtained to understand the visitors better. There were many more male viewers (62.9 %) interested to give their opinion about the exhibition compared to female viewers (37.1%).

Age group in years	Male	Female	Total
Under 19	27	21	48
19-24	45	33	78
25-45	88	65	153
46-65	144	54	198
Over 65	72	49	121
Total	376	222	598

Table 4: Age and gender of the viewers

The age was distributed into five groups. The majority of viewers were in the age group 46-65 years with 33% and the lowest being under 19 years age group with 8%. 13% of visitors belonged to the age group 19-24 years, 26% were in the 25-45 years' age group

and 20.2% were those over 65 years. Table 4 presents the age groups and gender of the participants.

Place	Number of viewers	Percent
UK- Canterbury, Kent	181	30.3
UK	287	47.9
Rest of the world	130	21.8

Table 5: Viewers' place of residence

At the time of the exhibition, the majority of visitors, i.e. 78.2% were living in the UK, out of which about one-third were from Canterbury, Kent (Table 5). It was interesting to note that 21.8% of visitors belonged to different parts of the world who were visiting Canterbury as outsiders or foreign tourists at that time. It is evident that there was predominance of visitors rather than local residents. They were, therefore, of different nationalities indicating there was no reservation to seeing the exhibition regardless of race, ethnicity or nationality. The highest percentage of visitors from the UK were "White" either British or Irish i.e. 65.6%. 2.8 % were mixed race, 3% were Asian or Asian British, 6% were Black or Black British and 1.8 % were Chinese or of other ethnic group –all of them were British nationals. The remaining percentage included 27 different nationalities – American visitors 4.3%, German 4.8%, Dutch 2.8% and others from Asia, Australia and New Zealand.

In order to ascertain viewers' empathy towards people with dementia, one of the questions was to find out if they knew anyone personally who had dementia. More than half of viewers, i.e. 58.7% had no personal association with anyone with dementia. 41.3% viewers expressed their involvement with a family member, friend or an acquaintance or someone at their workplace. Out of this figure, 21.6% of viewers had someone in their family who had or was diagnosed with dementia. Amongst family members, the majority mentioned grandparents, followed by parents, others mentioned their parents-in-law, aunts, spouse, siblings and brother-in-law. 4% of viewers knew close friends or acquaintances. Those visitors who had come across people with dementia at their work place were 13.7%. It was found that a very small number (1%) of viewers had dementia who specially came to see the exhibition.

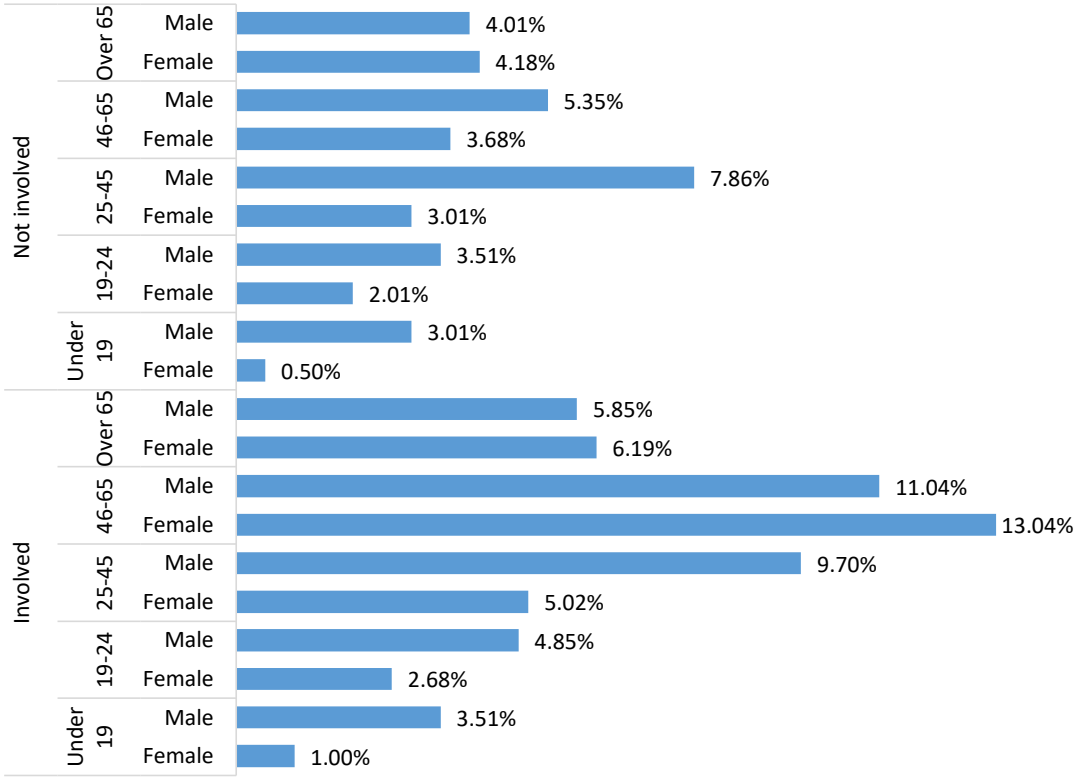


Figure 42: Distribution of viewers' involvement with people with dementia according to age and gender

In Figure 42, the least involved viewers with people with dementia were the male visitors in the age group of 25-45 years of age. The ratio of male viewers was a higher percentage in all age groups except over 65 years, indicating less involvement compared to female viewers. Viewers who were over 65 were almost equal in percentage. Interestingly, each age group confirmed some kind of involvement with people with dementia. The ratio of female viewers in the age group of 46-65 years was higher than the male of the same age group. Female viewers who were under 19 years of age had minimum involvement compared to the male counterparts of the same age group. The ratio of male viewers in the age group of 19-24 years and 25-45 years were higher than the female viewers. Viewers over 65 years of age were more or less the same in percentage.

To establish viewers' interest in an art exhibition, their prior knowledge of arts had to be considered in order to understand their involvement. 26.8% of viewers were in art or creativity related professions, 10.7% of visitors were practicing artists and designers, 9% were in teaching professional in arts, cultural or media subjects and 7% worked in art, design or creative profession. The majority of viewers i.e. 73.2%, who came to see the exhibition were interested in arts, out of which 12% were students who began studying art. This indicates that art attracts everyone to enjoy and experience it, no matter whether they have any art education or not.

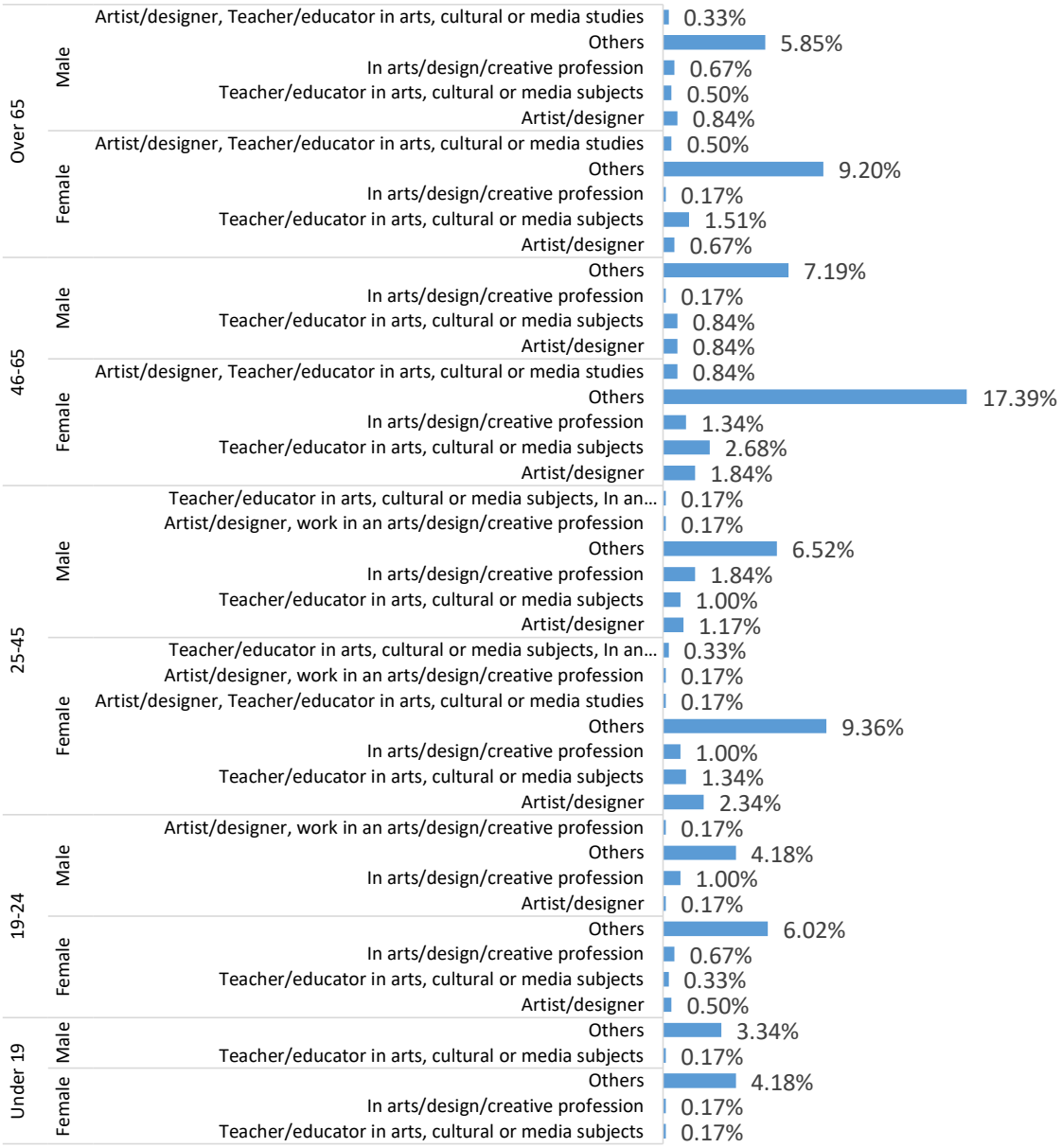


Figure 43: Distribution of viewers' art involvement according to age and gender

According to Figure 43, none of the male or female viewers under 19 years of age were professional artists or designers and some of them were students of art or other subjects. In the artist/designer category, females were more in ratio in the other age groups except over 65 years. There were no male viewers in the 19-24 years age group in art related teaching profession. The proportion of female viewers in all age groups was higher in this category also. Results showed no male viewers of under 19 years old age group were working in art/design or creative professions but some female viewers did. The ratio of male viewers in 19-24 years, 25-45 years and over 65 years in this category were higher in comparison to females except the age group 46-65 years.

The greatest number of viewers were females who selected "others" and had no association with art or art professions and the majority was in the age group of 46-65

years. Interestingly, the highest percentage of male viewers in this category was also in this age group. In all the other age groups, the female viewers were higher in number.

Viewers' opinions on variety of sculptures

Questions were prepared using a semantic differential scale to evaluate viewers' opinions on the variety of sculptures displayed. The semantic differential method was used to understand their choice of individual meanings of words, depth in thinking and their feelings in response to each exhibit (Mangal and Mangal 2013). The two polar ends of the scale were labelled with adjectives of contrasting statements: "very good" and "very poor". When viewers chose a point on the scales, they conveyed the degree of attribute expressed by the respective adjectives. Numerical values assigned to the points on the scales were analysed.

In the exhibition, five varieties of sculptures created during the main study by seven participants were displayed - relief sculptures in clay, papier-mâché sculptures, sculptures made using 3Doodler pen, 3D printed sculptures and virtual sculptures. Therefore, viewers' responses to individual displays had to be obtained to find out any pattern of preferences. The results clearly indicated more emphasis on the ratings of positive adjectives "very good", "good" and also "neutral" response from the distribution of viewers' ratings for all displayed sculptures. Comparing the responses related to use of traditional methods indicated their opinion in terms of rating of sculptures made of clay and papier-mâché. It is clear that the viewers considered the relief sculptures in clay "very good" compared to the papier-mâché sculptures (64.2 % and 46.3% respectively). 33.1% of viewers rated the latter as "good" which was higher than 26.4% on clay sculptures. 19.7% of viewers rated "neutral" and 3.3% rated "poor" for the papier-mâché sculptures, which was again higher than the clay sculptures with 9% and .3% respectively. The only instance of rating "very poor" could be seen for papier-mâché sculptures, not for any other exhibits displayed.

Viewers' response of "very good" were highest for sculptures made using 3Doodler pen showing 68.6%. The reason could be that most of the viewers were unaware of this unconventional technique of making sculptures and saw them for the first time. 23.2% of viewers found it "good", 6.4% were "neutral" and 1.8% found it "poor". The sculptures created using digital technology were the 3D printed sculptures and virtual sculptures. 67.7% rated the former as "very good" in comparison to 60.9% for virtual sculptures. The reason could be its physical presence rather than the projection of the virtual sculptures. 27.3% rated the virtual sculptures as "good" compared to 23.4% of 3D printed sculptures. 9.7% viewers rated the virtual sculptures as "neutral" and 2.2% as "poor" which was higher than the 3D printed sculptures rated as 7.7% and 1.2% respectively.

Some of the results of the association of viewers' rating of the displayed exhibits according to their gender were statistically significant where the P-value showed less than .05. The association of gender of the viewers with their rating of display of clay relief sculpture confirmed significance ($p = 0.043$). Rating of sculptures made with papier-mâché, virtual sculptures and 3D printed sculptures were also found to be significantly associated with gender with p-values 0.014, <0.001 and <0.001, respectively.

Pearson's chi square test was mostly used for other results except for those with the count of a table less than 5 and hence Yates test was used. The overall association of viewer's age and their rating the display of relief sculptures in clay is significant ($p = .011$). This could be because of the familiarity of the material with all the age groups. Applying the chi-square test on the relationship of age with the remaining varieties of sculptures showed no significance. The association of viewers' gender with their preference of display method also did not show any significance. It was interesting to note that the association in the relation of race/ethnicity with preference of display method was statistically significant for the display of papier-mâché sculptures and sculptures made using 3Doodler pen ($p = .008$ and $p = .001$ respectively). This was an unexpected result as papier-mâché is still a known material to people from different race/ethnicity compared to 3Doodler pen. Association of other sculptures with their race/ethnicity was non-significant. The same test confirmed non-significant when associating the viewers' profession or involvement with art with all varieties of sculptures. There was no significance in the relation between viewers' involvement with people with dementia and their rating of the variety of display sculptures.

Viewers' outlook on exhibition involving people with dementia

It was very important to find out whether the viewers were able to identify any change in their opinion while perceiving the exhibits which could be significant for the research. By displaying the sculptures as creative outcomes of people with dementia in an exhibition, intention was to highlight their expressive qualities through the works. Therefore, one of the open-ended questions was *"Has your perception of dementia changed as a result of viewing this exhibition? Please explain".*

Interestingly, 62.4% viewers answered in the affirmative indicating that exhibition such as *Sculptural Revelations* has the potential to affect the attitude or outlook of the public in general. 35.5 % viewers did not consider any change in their perception. The reason could possibly be the realisation of being more aware of dementia. More than half the viewers already knew someone who had dementia and the other half worked with them, worked in the health sector or were studying subjects related to mental health. Only 2.1% of responses of viewers were neutral.

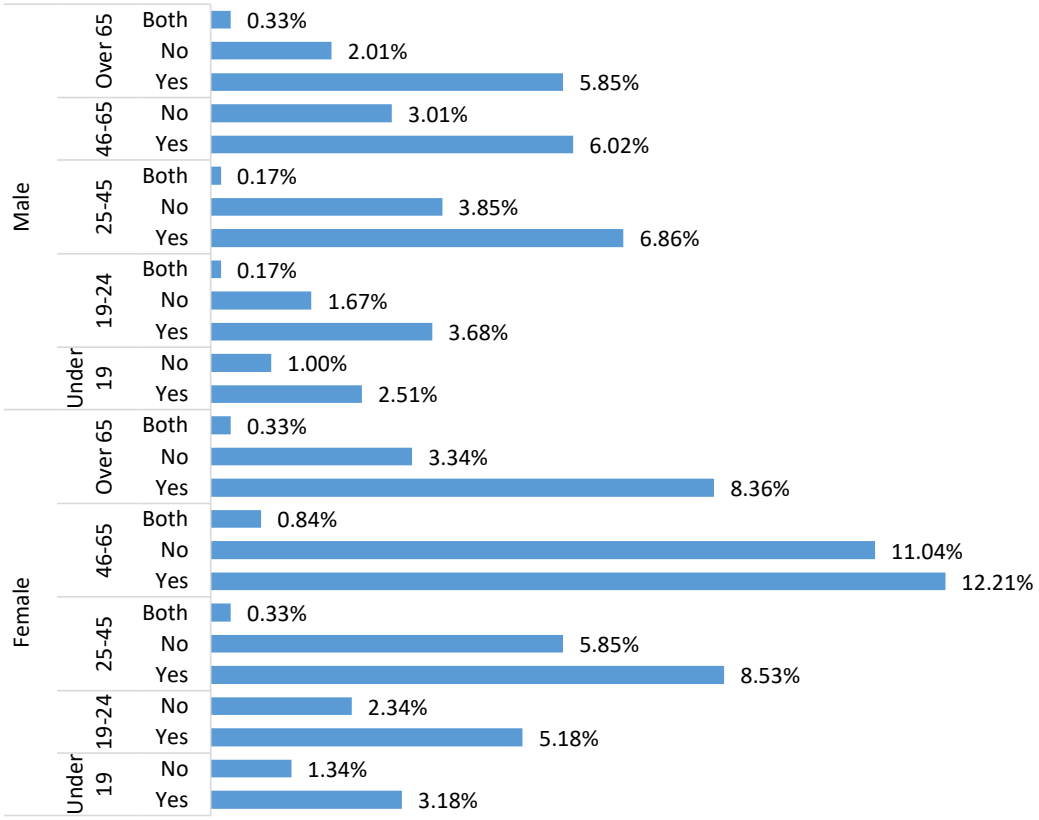


Figure 44: Distribution of age, gender and any change in perception of viewers

According to Figure 44, female viewers in the age group 46-65 years were a majority (12.21%) in stating that there was some change in their perception. Amongst male viewers, the highest percentage (6.86%) was 25-45 years' age group who found the same. Those viewers who did not find any change were females (11.04%) in the age group of 46-65 years, possibly because they already knew someone who had dementia. Among male viewers in the age group of 25-45 years, 3.85% was the highest percentage who had given a negative response. The association of viewers' age and effect on their perception and the association of gender and perception of viewers were statistically insignificant. However, significance is confirmed in the relation between the ethnicity/nationality and viewer's change in perception ($p = .041$). This is an interesting result as this exhibition had attracted viewers of different race/ethnicity/nationality from different parts of the world and many visitors were less aware of the condition of dementia in their countries. The association with the viewers' profession or involvement with art shows no significance but the association of the viewers' involvement with people with dementia and their change in perception are statistically significant ($p < .001$). This result is because of those who are involved with people with dementia reconfirmed their association and those who were not involved had gained information about the condition and people who have it, which changed their perception.

Thematic analysis of viewers' responses

This section of the chapter presents the qualitative analysis of the responses on the viewer's perception of the exhibition. The focus of this qualitative phase was primarily to supplement the earlier quantitative data. The way viewers described their perceptions advocated the effectiveness of this kind of an exhibition to address the issues of creativity and dementia. It was found from the questionnaire that viewers responded in their own ways to the exhibits and the way they understood the condition of dementia. The diversity in the display of sculptures brought attention to the creative potential of an individual despite the fact of being affected by the condition of dementia.

Viewers' answers were transcribed and then thematically analysed using NVivo software. Once data were analyzed, it was peer reviewed by two people who had experience of qualitative analysis to ensure the relevance and usability of the results. Five key themes emerged from the data which was categorised into seventeen sub-themes: Attitude, Abilities and capabilities, Art as an outlet, Creative engagement and Positive response.

Attitude

Attitude of an individual expresses a feeling and opinion of something or someone and can indicate an influence on perception (Pawlowski, 2012). The possibility of the habitual manner of viewers' general thinking and past experiences may come out and consequently reflect on their judgement. Viewers' comments at the time of the exhibition presented their point of view of the condition of dementia and their understanding of the impact of art interventions on people with dementia. Their perspective ranged from negative to positive attitudes on dementia and sometimes a combination of both. The latter was mostly visible where the viewers had expressed their change in perception. Viewers' attitudes brought out their preconceived notions and their limited, as well as expert, knowledge and understanding.

Dementia was described as a mental illness in most of the viewers' comments. They were aware of its connection with the brain and memory. The comments of those viewers who did not find any change in their perception after seeing the exhibition were associated with their previous knowledge:

> *"Reduced mental capacity often reduces other functions of the body."* (Female, 25-45 years)
>
> *"With dementia individuals have to combat a deteriorating mental state."* (Male, 19-24 years)

Viewers who realised change in their perception after the visit commented on the condition of dementia:

"I don't know a great deal about dementia but I know it is debilitating and the brain gets affected." (Female, 46-65 years)

"The mental problems that afflict them could be dreadful and so deeply affect their lives and their family." (Male, 19-24 years)

Several statements of the viewers specifically included descriptions which were stereotyped views on dementia. These views, often based on the assumption of people with dementia being mentally unstable and therefore less able to contribute or make decisions which can be seen in the following comments:

"I imagined that people would not be connected enough with themselves and their world to create works of art." (Female, 46-65 years)

"Had no idea they can be creative at all in their condition, they may not know who or where they are." (Female, 46-65years)

Abilities and capabilities

There is a subtle difference between the ability and capability of an individual. Ability means being able to work or perform while capability means having potential to carry out a task at hand. Even though the skills are present in an individual, applying those skills to create something needs capability. Viewers in the exhibition recognised the difference and gave equal emphasis to both. Therefore, "abilities and capabilities" was categorised as a theme.

It was noticeable in the viewers' comments that one of the prominent skills required for the creation of the sculptures by the participants was the use of their imagination to represent their ideas. One of the viewers who was aware of the condition of dementia commented: "*People with dementia are not stupid, they forget but they can think and imagine"* (Female, 46-65 years). Another viewer said:

"It was definitely a big surprise to me because I have never thought dementia patients could be so creative and have their imaginations that are creative running in their mind. It replicated their mind when they were young as I saw in the exhibits." (Female, 19-24 years)

Though the exhibition presented the creative outcomes in the form of sculptures, it also confirmed the positive impact of artistic interactions on mental health and wellbeing. Usually, viewers perceived the mental condition of dementia as a gradual decline of mental stability and normal functioning. Some of the viewers commented about their change in perception which came after realising the physical and mental engagements of the participants in the process of making sculptures:

"It has shown me that actually there is life after memory loss and that amazing things can come from it." (Female, Under 19)

"Because it is great to know that dementia patients, even though their mind is confused and forgetful, they still have the mind-set to do something and still use their brain." (Female, 46-64 years)

Some viewers did not find any noticeable difference in participants' abilities or capabilities while viewing their creative works and acknowledged that art comes naturally to people independent of their mental condition:

"It helped me see and believe no matter what your condition, we are all still people. For me this was not from dementia patients, it was a beautiful opportunity to create in novel ways given to any creative being!" (Female, 19-24)

"I believe that if a person has a truly remarkable talent and passion for art, they never lose it despite their personal circumstances." (Female, 19-24)

But some viewers showed amazement to find the participants as normal as any other person without cognitive impairment and acknowledged them as normal people learning new things: "*I did not know they had such a fantastic sense of the arts in their condition! I am immensely impressed at the quality of the work. I had no idea it was possible for dementia patients to do this."* (Male, over 65) Another viewer commented: *"Pleasantly surprised at the level of imagination and artistry displayed by people with dementia."* (Female, over 65)

Art as an outlet

Another theme that emerged from the comments of the viewers was "art as an outlet" for the creative expressions to emerge in different forms. The sculptures created by the participants depicted different subjects which were very personal to each of them. Through their creations, some kind of non-verbal statements of their life were conveyed to the viewers' individual interpretation. Everything depended on the receptivity of the viewers to the exhibition. They found the process of sculpture-making captured participants' thoughts within the sculptural forms. Some found the exhibition as a means to express how creatively they could deal with their conditions.

According to some of the viewers' comments, participants were able to express themselves through artistic means conveying their emotions to others. Viewers linked the artistic expression as an option for people with dementia who sometimes feel frustrated, unhappy, depressed, or confused. Those who realised some change in their perception said:

"To see in a dementia patient a glimpse of something they can express with joy is a wonderful thing. I think the exhibits are great visuals of the emotional and functioning minds of individuals with dementia." (Female, over 65 years)

"There is always hope, emotions play a huge part on expression of personality and creativeness. I am amazed that persons suffering dementia can create such sensitive, uplifting inspiring art." (Female, 46-65 years)

Some viewers who did not find any change in their perception after seeing the exhibition commented according to their present opinion and understanding of the condition. The emotional expressiveness had the capacity to expose the positive or the negative side of an individual dealing with dementia:

"It made me reflect on how this creative outlet could be an extremely positive experience and a way to release frustration or emotions for someone going through this difficult time." (Female, 25-45 years)

"It illuminates that part of human being which shaped and moulded by interaction with people, it shows the bedrock or at least the last things to go in a person's mind is their emotional responses to other people over a long lifetime." (Male, 25-45 years)

Based on some of the comments of viewers, "personality" was a prominent aspect which was reflected in the exhibition. Somehow each sculpture acquired its unique quality because of the way the participants dealt with the themes of their artworks reflecting their distinct individuality. Even though people with dementia sometimes struggle with fluctuating personality and behaviour changes, art could be an outlet to make others know the real person inside. Viewers who considered some change in their perception commented in different ways:

"Made me realise even more, that there is still some of the person left inside which wants to come out and some ways reaches you." (Female 46-65)

"It shows how people with dementia still have a personality even if they cannot remember things." (Female, Under 19 years)

Some comments of viewers who did not consider any change in their perception after seeing the exhibition were built upon their previous knowledge of dementia. The exhibits confirmed their understanding of the loss of identity experienced by people with dementia:

"My understanding was that dementia does not hinder creativity and personality & emotions can still be expressed. I have experience with dementia in my family. But found the exhibit very interesting in how it represented each patient as an individual - so often so much of a person's identity is lost by dementia." (Male, 25-45 years)

"I believe in using the creative arts in all forms, music, drama, dance etc…..because you will always "find" their personality in all of them and all are capable of reproducing and enjoying all kinds of arts without changing what they are." (Female, over 65 years)

The next category which repeatedly came up in the comments is "Communication". We know for certain that art helps in communicating ideas and emotions to the viewers. This realisation came naturally to viewers, which was applicable to the works created by people with dementia. They commented in their own ways indicating some changes in their perception:

> *"I would have expected people with dementia to mainly create representational art reflecting their past. But, some pieces escaped an easy interpretation. I found that these pieces could reveal much more of the artist than one might expect at first, giving much more insight."* (Male, 25-45 years)
>
> *"Opened up the idea that invention and creation are still possible as forms of communication and memory."* (Female, 46-65 years)

According to some viewers, their comments just confirmed their pre-existing views of the relation between art and dementia after seeing the exhibition:

> *"Art gives a window into the mind of someone with dementia. It is different but very important way of communication."* (Female, 19-24 years)
>
> *"I mean you cannot say what exactly is art. Every single exhibit has own history and character. I have always liked to do something like this. The short descriptive comments beside the works were perhaps more moving than the artefacts themselves as if they were the real voice of the people."* (Male, 25-45 years)

Creative engagement

Participants having dementia and being engaged in creative endeavours was very appealing to viewers which they mentioned in their comments and, subsequently, one of the themes which emerged was "creative engagement". Undertaking creative work requires various skills which start from imagination through to final creation. According to the comments of viewers, engaging the participants in a variety of sculpture-making processes was noteworthy. It was impossible to create any of the sculptures without being involved in the process which gives emphasis to the "process of making". Viewers could make out that each process had different requirements and people with dementia had somehow been able to coordinate physically and mentally to produce sculptures. Those viewers whose perception changed after seeing the exhibits commented:

> *"It also made me aware that the creative process is not restricted to certain people but it is there in all of us. I wish more people with dementia had access to this opportunity. It shows that dementia, as limiting as it is, does not take away the person and their ability to make art and be artistic and deal with the range of different kinds of involvement in the making processes."* (Female, over 65 years)
>
> *"At least up to a point it has changed my thoughts: I am impressed that people with dementia get involved in such complex & long lasting artistic processes."* (Female, 46-65 years)

Viewers were able to point out in their comments about the stimulating qualities of art:

"People's creativity is still apparent and it is good that it is encouraged to stimulate the brain." (Male, 46-65 years)

"It taught me that there is still potential to stimulate people with dementia, obviously work with the person is necessary – I appreciate their efforts, but I hope it continues to stimulate them." (Male, over 65)

Engaging in "artistic medium" confirmed viewers opinions of its appealing qualities. The use of different materials by the participants showed the way they handled these as all of them had their own unique qualities. The medium was very important for their expressions which the viewers could see and they commented:

"More impressed by their ability in handling different materials and making such beautiful art work." (Female, 19-24)

"The exhibition shows the different ways in which the participants respond to different materials - clear evidence of how working in 3D comes more naturally to many people (children included)." (Male 46-65)

Positive response

Some of the comments revealed that the viewers responded positively towards the exhibits and the involvement of people with dementia. Some visitors were already aware of creativity as one of the factors contributing to mental health and wellbeing and the things which were adopted in this study to support it. Their comments reflected the belief that art influences the people with dementia positively. Viewers appreciated the efforts of the participants and the fact their condition of dementia did not interfere to stop their involvement. They commented showing their "appreciation":

"It is basically impossible to figure out from the products which might have been created by a person who suffers from dementia. Surprised at high level of creativity and lucidity they articulated about them." (Female, 46-65years)

"I was looking at the art without knowing the back story and I was amazed to find out the artists are dementia patients. Appreciation of the emergence of hitherto unrealised possibilities." (Male, over 65 years)

According to the viewers, the participants with their condition of dementia were as inspirational as the sculptures they created, therefore "inspiration" was another aspect highlighted as a category. Those who were not aware of the condition and those who knew very little of the important role that art can play commented:

"I found it so intense and inspiring, it made me realize how little I know about the disease. The works are inspirational and indicative of the need to recognise that creative activities are the key to unlocking memories and helping people to realise the potential in every single person." (Female, over 65)

"It is been quite enlightening to establish that whilst dementia may pose some everyday difficulties, the creativity function of the brain seems to be more prevalent, particularly as these individuals have not probably originated from an arts background - quite inspirational!" (Female, 25-45 years)

Another category was "acceptance" which the viewers mentioned in their comments about the realisation of accepting people with dementia as they were and how important it was for the person with dementia and their family members. This would also help in not making them feel socially isolated or deprived from social interactions because of their condition. Their comments were:

"Whilst this has not altered my perception, what it has done has reinforced my deeply held belief that with good teaching, patient encouragement and person centred support, the potential of people with dementia to produce some amazing work is possible. More need for acknowledgement to recognise hidden qualities in their minds - that as a participant and a spectator." (Male, 46-65 years)

"Surely old people with dementia can do amazing things, I am seeing this for the first time. Not just sit down and read the newspaper. They can still be taught to do things, the same way I do as a student." (Male, Under 19 years)

Viewers' preference of traditional or digital sculptures

Lastly, the viewers were asked - *Which of the sculptures displayed, traditional or digital, had appealed to you most*? *Please explain.* 51.8% of viewers showed preference for traditional sculptures and 27.3% of digital sculptures. 20.9% of viewers preferred both types of sculptures. The result indicated a higher percentage of viewers found traditional methods of using clay and papier-mâché for making sculptures more appealing and there could be reasons for their choice; it could have been because of the familiarity of the techniques and materials or tactility, physicality and visual appeal. The viewers also considered the participants' self-initiated ideas expressed in their sculptures. It was not solely the technique used but the methods incorporated to express their works. The result also indicated that the digital sculptures were now being accepted as a work of art and viewers were gradually becoming aware of such methods.

The highest percentage of preference for traditional methods was mostly by female viewers in the age group of 46-65 years (11.04%) and amongst male viewers, it was the age group of 24-45 years with 7.36%. Female viewers in the age group of 46-65 years also showed a higher percentage in their preference for digital techniques as also both the combined methods. The association of viewers' age or gender with their preference for methods were insignificant according to results. Similarly, the association with their involvement with people with dementia also was non-significant. It was found that the relationship of viewers' involvement in art-related professions or their general interest

in art with their preferences for methods was statistically significant (p = .037). This result proved that viewers interest in art or having a background of art and art professions had some influence on their decision-making.

In the last section of this chapter, viewers' perceptions of people with dementia were discussed and elaborated and the changing qualities in the viewers' thinking, which they became aware of, were highlighted. To understand viewers' in depth perceptions on art, they were asked to elaborate on those choices of method of sculpture-making seen in the exhibition which had appealed to them for various reasons, whether produced manually or digitally. The explanations were based on their existing knowledge and appreciation of participants' ideas exemplified in the sculptural forms. Thus, how far the method influenced their decision had to be addressed.

For thematic analysis three sets of objectives can be looked at: the examination of commonalities, examination of differences and the examination of relationships (Gibson and Brown 2009). The last two were important as examining the differences would emphasise the peculiarities and contrasts of the two methods. Examining relationships would present a particular characteristic or difference relating to a general theme.

Viewers pointed out the distinctive qualities of both methods in their explanations. The traditional methods used in clay and papier-mâché were preferred because of the familiarity with the material which was the most obvious reason: "*I could relate to the traditional sculptures more - having used these materials myself." (Female, 25-45 years).* One viewer commented on the familiarity of its expressive quality: "*Prefer the classic way to express people's feeling, especially those with the author's fingerprints."* (Female, 25-45 years)

The physical interaction with real materials to create a sculpture and the tactility were found to be exciting for some viewers and consequently it was more appealing to them to get involved in such activities:

> *"I think what appeals to me is an individual's impression on a material and its physical existence. The sculptures made by hand have a lot more personality to them, you can really feel the person's spirit in these pieces."* (Male, 19-24 years)
>
> *"I like the aspect of traditional methods that the artists actually came in direct contact with them learning them manually. This implies to me a more intimate relationship."* (Male, 25-45 years)

According to some of the viewers, the sculptures using traditional methods depicted emotional qualities better than the digital methods. Interestingly, age was not a factor for having an obvious inclination towards it. Following are comments from two different age groups:

"I feel there is an element of emotional depth in the traditional sculpture which is more difficult to detect in a digital image." (Female, over 65 years)
"For me traditional sculptures have a more realistic means of portraying an emotion or point." (Female, 19-24 years)

Unlike the reasons mentioned earlier for viewers' preferences for traditional methods, the digital techniques appealed to viewers differently. Most of the viewers found it new and therefore had less awareness of the technology involved and its possibilities:
"Traditional art will always have a place but it is the digital art which is progressing in ways to engage young and old minds into viewing art differently." (Female, 25-45 years)

The usual responses from younger viewers were expected to be in favour of digital methods. Interestingly, this was confirmed by their comments and they openly accepted digital methods, as it was part of their education and upbringing: "*I was brought up with technology (I am a tech nerd) so it appeals to me the most."* (Female, Under 19 years*)* Another viewer said: *"More understanding of the digital life, so I feel more comfortable with it."* (Male, Under 19)

In regards to digital methods, age-related inhibition was expressed by some of the viewers, however there were some comments which indicated digital methods being accepted and acknowledged by older adults: "*Because this format is less common and therefore very exciting and varied."* (Male, over 65 years)

One of the reasons why some of the viewers found traditional methods more appealing was because digital methods involve technology and require technical knowhow. This was expressed by a male viewer in 19-24 years age group maybe very justifiably: *"It's hard for older people to learn new things. Most can work with their hands but lack the understanding the new digital world."* (Male, 19-24 years)

However, according to some viewers combinations of both methods were appealing to them. They commented that merging both methods would give expressive quality and maximum artistic impact. One viewer said: "*Hands on tactile experience is very important but embracing new art forms through available technology can be as artistically powerful." (Male, 46-65 years)*

A few others highlighted the qualities of both methods – working with hands first and then technique and technology taking over the process of creation which according to some could be used vice versa. One viewer commented: "*Both have their own qualities. I liked the traditional because it is more familiar with work I have done in schools with primary children. The digital because it demonstrates endless possibilities I was*

unaware of. If traditional exhibits technical skill to capture real life and Digital in expression of ideas, then it would be an ideal combination." (Female, 46-65 years)

6.2 Exhibition 2 – *Intimate Conversations*

The second exhibition was held at Studio-3 Gallery, Jarman Building, University of Kent in Canterbury from 31st July to 3rd August 2017. This solo exhibition titled *Intimate Conversations* presented my works after a gap of a year since my last exhibition (explained in Chapter 5). The exhibits included twenty steel sculptures, four fibreglass sculptures, four wooden sculptures, eight augmented reality sculptures, animated virtual sculptures displayed on computer screen and sculptural installation (details of these processes of making the sculptures were given in Chapter 5).

Figure 45: Flyer of *Intimate Conversations* exhibition (top left), exhibition (top right) and floor plan of Studio3 gallery (bottom)

Prior to the exhibition, a flyer was designed with a picture of one of the sculptures as the main element (Figure 45). The same method of publicity was undertaken as the earlier exhibition. Next stage was setting up the exhibition in the gallery space. The

exhibition was planned in an order of sequence so that viewers understood the relation to each exhibit and the way the works have evolved. It was important that the visitors' movement follow a particular path which would bring attention intentionally to each set of sculptures displayed on plinths (Figure 45).

Viewer's profile

The exhibition attracted 112 visitors, out of which 70 gave consent to complete the questionnaire. There was a marginal difference between female and male visitors, who came to see the exhibition, with 51.4% being female and 48.6% male (Table 6).

Age group in years	**Male**	**Female**	**Total**
19-24	2	4	6
25-45	13	10	23
46-65	8	9	17
Over 65	11	13	24
Total	34	36	70

Table 6: Age group and gender of viewers

The majority of visitors were in the age group 25-45 years and over 65 years with 32.9% respectively. Visitors in the age group of 46-65 years were 25.7% and age group of 19-24 years were 8.5%. There was no visitor under 19 years of age.

Most viewers were White, either British or Irish, with 58.6%. 28.5% were Asian, 2.5% were mixed Asian. Other nationalities were Arabic, German, Polish and Spanish with 1.4%. Compared to the earlier exhibition, this exhibition was at the University of Kent and did not have any tourist visitors. 60% of viewers were local from Canterbury and 30% from other regions in Kent. Remaining 20% viewers were from London, Manchester and Southampton.

Regarding the viewers' involvement with people with dementia, it was found 57% did not have any direct involvement, which is a large number. Out of the 43% who were involved at work, in their life, etc. 18.6% of viewers knew someone where they worked and 12.9% had a family member diagnosed with dementia. Only 4.3% knew a friend who had dementia and 2.9% of viewers had involvement was through their studies about dementia as students. Figure 46 shows the distribution of their age and gender with their involvement with people with dementia. The highest percentage not involved with people with dementia were male viewers in the age group 25-45 years (15.71%). The highest percentage involved with people with dementia were females over 65 years (11.43%), many of them were a carer or spouse of those people who had dementia.

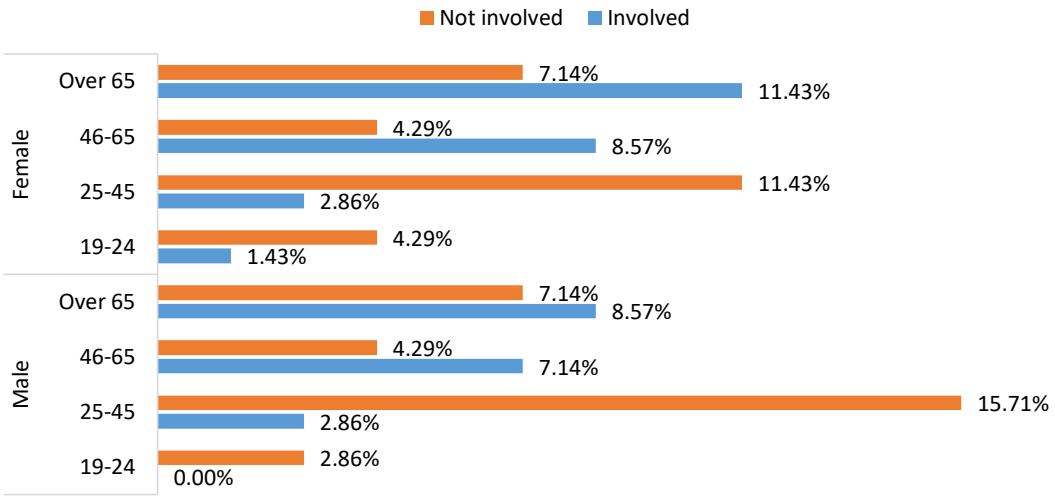


Figure 46: Distribution of viewers' age, gender and involvement with people with dementia

As the study was about the relation between art and dementia, knowing about viewers' backgrounds in arts would help in determining their interest in seeing the exhibition. 60% of viewers had a general interest in art and had no involvement with art professions either currently or previously. 14.3% of viewers were artists or designers by profession and teachers and educators in art related subjects respectively. 11.4% viewers worked in professions associated with art. Interestingly, the highest percentage of viewers who had a general interest in art were over 65 years of age, of which female viewers were 14.29% and male viewers were 12.86%.

It was important to know the viewers' levels of knowledge regarding sculpture-making processes as the exhibition displayed sculptures using different methods. 54.3% of viewers had very little knowledge or any knowledge at all. 40% had general knowledge indicating their interest to see the exhibition. Only 5.7% of viewers had expert knowledge and most of them were artist or designer by profession. The highest percentage, 12.86% of viewers with little or no knowledge of the sculpture-making processes were female over 65 years. The highest percentage of viewers with general knowledge were male viewers of 25-45 years (8.57%) while 2.86% of female viewers of the same age group had expert knowledge. Among female viewers, the highest percentage with general knowledge was the age group 46-65 years (8.57%).

Most of the exhibits involved digital technology therefore it was important to understand viewers' levels of knowledge. 71.4% had little or no knowledge about digital methods which indicates large number of visitors required information and explanation to understand the various digital techniques used. 24.3% had a general knowledge and only 4.3% had expert knowledge. Amongst those who had expert knowledge were teachers or educators and worked in art or design-related profession. 15.71% female viewers over 65 years were the highest percentage who had little or no knowledge of digital

technology and 14.29% were male viewers of the same age group. Male viewers of 25-45 years age group had a general knowledge, with 8.57%, while female viewers of the same age group had the highest percentage of expert knowledge (2.86%). This shows that digital technology as part of everyday life and education has raised the level of knowledge of this age group (25-45 years) compared to the next age group (46-65 years).

6.2.1 Findings and discussion

Viewers' reaction to various sculptures

Overall experience of sculptures in the exhibition was rated according to 5-point Likert scale – from "very good" to "very poor". 68.6% rated the exhibition as "very good" and 30% rated as "good" which indicated the positive response of the exhibits and the success of reaching out to the public based on the exhibition theme of interactions with people with dementia. Only 1.4% rated as "neutral". The relationship between gender, age and rating the variety of sculptures had no significance. The ethnicity or nationality of viewers and its relation to the rating of variety of sculptures was statistically significant ($p = .016$) which could be due to the different levels of visitors' background knowledge of sculpture as an art form and different processes used in its making. Similarly, the level of knowledge of sculpture-making processes in relation to their overall rating showed significance ($p = .041$). The relationship between viewers' level of knowledge of digital technology and their rating the variety of sculpture showed no significance.

Steel sculptures were rated "very good" by 68.6% of viewers, fibreglass by 61.4% viewers, virtual sculptures by 57.1% but the maximum percentage was rated for wood sculptures at 70%. Those viewers who rated the sculptures "good" were highest for virtual sculptures with 35.7%, followed by 32.9% for fibreglass, 27.1% for wood sculptures and 22.9% for steel sculptures. 7.1% of viewers rated "neutral" for steel sculptures, 5.7% of viewers rated for both fibreglass and virtual sculptures and 2.9% for wood sculptures. 1.4% of viewers rated "poor" for steel sculptures as well as virtual sculptures respectively in comparison to other sculptures. These results indicate the highest percentage for the preference of wood sculptures; one of the reasons could be because of its being a natural material which has been in use for a long time for sculptures. The other reason could be that the wood sculptures were left untitled and viewers had to discover the meaning behind each work. Viewers were also encouraged to touch the sculptures and the tactility possibly appealed many. The next set of sculpture liked by visitors were Fibreglass sculptures with the bright colours and unusual abstract shapes depicting yoga poses which being attractive to many visitors.

Further analysis showed the relationship of gender and age with the rating of all the sculptures showed no significance. The association between ethnicity and rating of

wood sculptures showed significance (p =.01) but not in relation with other sculptures. As mentioned before, wood sculptures were more appealing in terms of the material being familiar and more tactile and the abstract forms demanded to be given new meanings. Interestingly, the relationship between viewers' involvement with art and their rating the variety of sculptures showed no significance. Level of knowledge of sculpture-making processes in relation to the rating of steel sculptures showed significance (p = .019) but not with other sculptures. This could be because these sculptures were displayed with written descriptions of the artist's interactions with each person who had dementia, explaining the forms depicted. Visitors who had different levels of knowledge of sculpture making processes showed interest to find out whether the forms created carried the meanings. The relationship between viewers' levels of knowledge of digital technology and rating all the varieties of sculpture showed no significance.

For many viewers this was their first experience of seeing augmented reality sculptures and animated virtual sculptures on a screen. It was important to find out whether they regarded the sculptures using digital technology as art or not. 64.3% viewers strongly agreed, 27.1% viewers agreed and 8.6% viewers were neutral. This indicated the viewers' acceptance of sculptures as a form of art which originated or were created using digital methods. The association of viewers' gender or age with their opinions of the virtual sculptures were non-significant. However, the association of ethnicity and rating of virtual sculptures as work of art showed significance (p =.049); this could be because sculptures amongst many race/ethnicities have particular identifying styles and virtual sculptures are not yet commonly viewed. The association of viewers' prior levels of knowledge of digital technology and virtual sculpture as work of art was statistically significant (p =.009) showing that appreciation of virtual sculpture can develop with familiarity.

The next question - *Do you think sculptures in virtual space have the same effect as the physical sculptures?* - was mainly to find out if the viewers felt any difference while perceiving virtual and physical sculptures. 15.7% of viewers strongly agreed and 25.7% of viewers "agreed" there was a difference, while 2.9% of viewers strongly disagreed, 25.7% "disagreed" and 30% were neutral. The relationship with gender, age and their opinion on effect of virtual sculptures and physical sculptures had no significance. The association of viewers' race/ethnicity and rating of effect of virtual sculpture showed significance (p value=.038). As mentioned in an earlier comment sculpture has different connotation according to race/ethnicity which may have a cultural influence. Virtual sculpture has a different approach in its making and viewing and hence visitors experience it differently. The relationship between viewers' involvement with art and virtual sculpture having same effect as physical sculptures showed no significance. Level of knowledge of sculpture-making process and level of knowledge of digital

technology of viewers in relation to their opinion on virtual sculpture as physical sculpture showed no significance.

The majority of viewers' (58.6%) had a preference for traditional or digital methods yielded result which showed the former with higher percentage 17.1% preferred sculptures mediated through digital technology and 24.3% viewers preferred both methods. Results show an obvious liking for traditional methods because of comparatively more awareness and understanding, therefore making it more familiar. Highest percentage were male and female viewers over 65 years age-group. However, the association of viewers' age with their preference to traditional and digital methods was not significant. Similarly, the association of viewers' gender and their preferences and viewers' race/ethnicity and their preferences also showed no significance. There was no significance even in the relation between the locations of residence with their preference of digital or traditional methods. The association of viewers' involvement with art and their choice showed no significance and also their involvement with people with dementia and their preferences. Even the relationship between viewers' level of knowledge of the processes of making sculpture and their preferences did not show any statistical significance. The level of knowledge of digital technology and their preferences of traditional or digital also did not show any significance.

The association of viewers' involvement with dementia and their rating of the variety of sculptures shows statistical significance (p =.019). This result indicates viewers' perception of the exhibits as it related to interaction with people with dementia and how it was represented as some visitors had direct involvement and some had knowledge of dementia. The association of the viewers' involvement with dementia and their appreciation of steel sculptures also showed significance (p =.003); the accompanying descriptive texts describing the research participants they represented perhaps made them more appealing. On the contrary, there was no significance in the association with wood sculptures and fibreglass sculpture which did not draw attention to dementia or people with dementia. There was statistical significance between viewers' involvement and their rating the variety of virtual sculptures (p =.020). Such finding indicates viewers were more observant of various displays of virtual sculpture (displayed on computer screen and AR on Tablet) and rated according to the differences. They were looking at the meaning of the sculptures related to dementia rather than focusing on the method used to present it.

First impression of exhibits

The first open-ended question for the viewers about the exhibition was *"Describe your first impression of the exhibits in the gallery".* Many used adjectives to describe the exhibition such as *"Impressive"* and *"Interesting"*. Their first impression depended on

many factors as they entered the exhibition space. It could have been the overall ambience or arrangement of the space, or the visual appeal of the exhibits. Many viewers expressed their curiosity to know more about the exhibits, some of their comments were:

"Attention catching. Made me curious. I was drawn to look closer to see what the pieces were about." (Female, 46-65 years)

"Very interesting require close attention." (Male, over 65 years)

Viewers made special reference to some of the particular features of the exhibition they liked which were most noticeable to them in the gallery space. The range of sculptures which were on display was one of the features that had appealed to many. Some of the viewers' comments were based on the diversity of display with a variety of interpretation of abstract & unusual sculptural creations. The other features were when they first entered, beside the variety of materials, were the lighting and the colours. They also pointed out the movement of the virtual sculpture on the screen and the video projection which was according to one viewer *"tempting to look at those first."* (Female, 46-65 years)

Although the themes of the exhibits were associated with people with dementia and their condition, viewers however reacted in their own ways; some mentioned in their comments how they felt emotionally for the entire exhibition:

"Atmospheric and peaceful. A lot of emotions described and shown in very simple artwork. Made me emotional too." (Male, 25-45 years)

"It is all beautiful, especially "The Journey". Interesting look into how people express their life story and emotions as sculpture. Overwhelming experience." (Male, 25-45 years)

Reaching beyond their emotional receptivity, the exhibition also appealed to their thinking process and many of the viewers found the exhibition thought provoking. They found the concepts engaging and interactive and persuaded them to look and think deeply which required skilful presentations of artist's ideas.

Some of the viewers' first impression were based on the way they looked at the placement and arrangement of the exhibits in the gallery space:

"Expressive works and expressively placed. Fascinated by the interesting shapes & material and the way they are put up." (Male, 25-45 years)

"Well laid out, clean, neatly arranged, professional." (Female, 25-45 years)

Interpretation of artist's intention

The next open-ended question was framed to establish how the viewers perceive an artist's intent when an artwork is displayed in an exhibition space: *what do you think the artist wanted to emphasize in this exhibition?* In the role of an artist I had conveyed

expressive qualities in each of the sculptures which carried meaningful statements of the interactions with people with dementia. Viewers' comments helped in finding what they considered the artist had tried to accentuate in the exhibition and what new meanings have emerged from the works.

Some of the viewers' statements reflected the meaning that they gathered from the sculptures displayed and the texts along with each work helped in understanding the reason for the creative outcomes of each form. They may have felt that the "experience of working with people with dementia" was the most dominating characteristic of the exhibition Following are some of the statements:

> *"The transience of dementia, the inner perceptions that are sometimes revealed."* (Female, over 65 years)
>
> *"Her experience of working with people with Dementia and how it has changed her perspective, what she has taken from these people. Through the labelling, I saw her story."* (Female, 46-65 years)

Some of the viewers emphasised the sculptural forms were most important in the exhibition. One of the reasons could be the variety of sculptures which gave viewers more spatial awareness of the shapes and forms on display. The variety of forms in four different mediums with different shapes, curves, forms and structures to interpret emotion were noticed by many.

Another reason could be that the range of physical sculptures in the exhibition were more prominent giving an impression that the artist's engagement of making sculptures was central. One viewer commented:

> *"To explore her own experiences as well as those of others through her varied mediums. To make the viewers think, contemplate, make own decisions about the work rather than influencing or using preconceived ideas to inform the viewer."* (Female, 46-65 years)

The artist's intention, according to some of the viewers' comments, was to display the use of various materials, methods and techniques, both traditional and digital, which they thought were being emphasised in the exhibition. It was to focus on the making process and how the utilization of different materials and techniques conveyed different outcomes, textures and volumes with the merging of digital and physical sculpture and how the spectator saw them differently. Few commented on the artist's attempt of doing hard work to recreate conversations and sculpting them into metallic and digital models which showed conventional and modernistic approach to art. Viewers pointed out the new way of exhibiting art work through AR technology which would facilitate to compare the difference of audience's impression between the virtual and physical sculpture.

Some of the viewers in their statements emphasised the "Creative expressions" of the artist. The expressive quality of the sculptures and the way emotions and ideas have been creatively interpreted might have given them this realisation which showed in their comments:

> *"The fragility, lyrical & poetical expressions of what it means to have a human body (memories, ageing and reality). An interesting development of ideas to express varied responses."* (Female, 46-65 years)
>
> *"For me it was the mixture of the physical artwork with the attached texts and written commentary on the work and the impressions of the artists making them. The text (labels) made me think about the emotional process of making the objects and not just the objects themselves. Turning emotions and stories into sculptures."* (Male, 46-65 years)

According to some viewers the sculptures expedited the communication of feelings depicting the inner world of people with dementia from the artist to viewer. In a way it was to discover insights into the minds of the participants and about dementia opening up greater possibilities of creativity and communication.

Some viewers considered the creative expressions by the artist were not just held within the sculptural representation but went beyond it, being conveyed to the viewers who then added this experience to their personal viewpoint of dementia. They commented:

> *"Art or sculpture can be of many different types of materials and formats. It can also represent the physical aspects (e.g. the human form in yoga poses) as the mental aspects (e.g. the drawings of dementia patients) of human beings."* (Female, 25-45 years)
>
> *"Sculpture is to create an object with shape, form and with some texture - but for the viewer this exhibition is to engage beyond this and focus on the conversations with the dementia participants."* (Female, over 65 years)

Difference between virtual and traditional sculptures

The next question was to find out viewers' personal opinions on the difference between the traditional and digital methods as the exhibition included sculptures created using both. One of the differences realised by viewers was the "difference in the method of making" and the skills involved with them. Their comments indicated they tried to look beyond the physical forms and more into how the sculptural forms came into existence. One viewer said: "*Digital method is computer based. It offers greater flexibility and scope for innovation."* (Female, over 65 years)

It became obvious that they realized the difference in the skill set requirements for both methods; the working approach to both methods being completely different, therefore the tool handling involved was also different:

"Different skills obviously. A knowledge of software and the possibilities of new forms and intricacies. Traditional methods inspire reference to the history and development of the sculptural forms. Digital methods inspire excitement and curiosity about what is possible." (Female, 46-65 years)

"They need different skills. I mean for the real thing, you have to try those materials, to know what are their limitations and possibilities. On the other hand, for technology, you have to learn computer." (Male, 25-45 years)

Another difference identified was the "difference in the expression of feeling" which affects the emotive qualities of the sculptures to a certain extent. It depended on the method being used and viewers were able to recognise the association of method and feeling which they mentioned in their comments. Some viewers felt the way artworks were interpreted changed greatly with digital sculpture. The difference was in the thought process or creating its impression. Using traditional methods still depended on the artist's feelings and decisions not just what the software dictated. For the viewers the emotions and sentiments that each work conveyed seemed to indicate the differences in method of creation more clearly. Some viewers found the process of creating a digital sculpture seemed to have less intimate relationship between the artist and the sculpture. In the real world emotions are individual which gives rise to feeling to be creative while handling of material. Feelings released in an artwork were expressed in different ways and that was considered the main difference. According to some viewers there was lack of emotional connection in the virtual world.

Many viewers mentioned about the differences they found in the "tactility" of physical sculptures and the feel of the texture of the materials. Fibreglass with its smooth shiny surface felt differently to the smoothness of the wooden sculptures. The former being manmade and the latter purely natural, they produced different responses which the viewers could still sense without touching. They easily pointed out that the digital sculptures lacked the tactile sensation they were used to.

"Traditional methods are very tactile but digital relies more on visual response. The tangibility and feedback of the materials are not present in the making process in digital spaces/environments." (Female 25-45 years)

"One is hands on and tactile. And messy! The other is cerebral and heavily reliant on a good computer program and nothing to do with handling of materials." (Female, 46-65 years)

Opinion on virtual sculptures compared to physical sculptures

The next question was - *What is your opinion of virtual sculpture compared to physical sculpture?* The exhibition showcased sculptures which were physical as well as virtual forms. How the viewers perceived the same sculptures in two different spatial

environments required further investigation. According to some comments, the sculptures in virtual space were devoid of physical contact and therefore some distance was left between viewer and the sculpture. On the other hand, even though the physical sculptures were placed on pedestals at a slight distance, they conveyed much more close proximity. One viewer commented, "*I suppose virtual sculpture can get lost in virtual space".* (Male 46-65 years)

Other viewers' opinions were based on their feelings on the relation of spatial qualities and materiality. Anything in virtual space has an impact visually. For many viewers the physical one seemed closer as one can touch and feel the work, otherwise sense it by seeing it. Traditional sculptures still seemed more intimate and tangible. One of the viewer commented:

> *"I am afraid I cannot feel much when looking at a virtual sculpture, what is it made of, where and how it stands. Virtual seems to enter the world of unknown. Physical sculpture is easier to identify with real materials. I like the virtual ones but they look different and are a different medium."* (Female, 19-24 years)

Some viewers commented on the technology involved with virtual sculpture being part of modern age. One viewer mentioned, "*I prefer physical sculpture - the tactile qualities, feel of the materials - I feel in current times there is movement towards virtual sculpture and digital images have a place in the arts."* (Female 46-65 years)

For some viewers, physical sculptures reminded them of tradition while virtual sculptures were modern and constantly changing and evolving with new technology. Virtual sculptures were found interesting as it served a significant purpose i.e. representing the same idea in various materials placed in a variety of virtual environments, which is rather difficult in case of physical sculptures.

Regarding the virtual sculptures, viewers recognized the visual effectiveness of using the virtual space and that it had to be perceived in a different way. They acknowledged it to be a novel concept with a lot of potential. Some comments also suggested that it would require more concentration and imagination to appreciate virtual sculpture.

The accuracy and precision of the virtual space was inevitably quite obvious to many viewers which was expressed by one viewer as: "*Virtual sculptures appear to have fewer imperfection, which seems inauthentic to me. Life is imperfect, and it is in these imperfection that give life so many varieties."* (Male, 25-45 years)

6.3 Summary

In this chapter, two exhibitions of sculptural forms created using traditional and digital methods for public viewing have been described. The exhibitions had a gap of one year in between; both exhibitions displayed creative outcomes based on the interactions with

people with dementia. The first exhibition *Sculptural Revelations* presented works created during the sessions for the main study by the participants who had dementia, as well as my own creations. Viewers included participants themselves and visitors to the gallery. The second exhibition *Intimate Conversation* showcased the researcher's own sculptural creations. Both exhibitions had sculptures produced manually and digitally and accordingly survey questionnaires were prepared to get the responses of the viewers. The first exhibition helped in addressing one of the research questions - "how do viewers perceive works created by people with dementia?" and the second exhibition addressed the question "in what ways do sculptures based on the theme of dementia affect viewers' perceptions of dementia?"

The two exhibitions had different approaches but both helped to understand in depth the viewers' perceptions of sculpture. Most of the viewers in both exhibitions preferred the traditional sculptures, though they accepted digital sculptures and acknowledged the technology behind them. Age, gender or their background in art were not the reason for their preference for traditional methods. The sensation of touch, which the viewers associated with sculpture, was mentioned many times. This was possible with 3D printed sculpture but not achievable in case of virtual sculptures.

In the first exhibition, most viewers who knew about dementia or were involved with dementia in one way or another mentioned not having any change in their perception as a result of seeing the exhibits. However, others who were not involved in any way were comparatively less aware of the association of art and dementia. Many of them considered that people with dementia lose their physical and mental abilities as the condition deteriorates with no possible cure so far, but looking at the sculptures, they could make out that there are ways to stimulate their imagination for creative purposes.

Viewers found the exhibits carried emotional information about the participants' lives depicted in their works and also discernible in the researcher's works. In the first exhibition, the theme of each sculpture was mostly person-centred and drew attention to individual identities which the viewers could easily make out. The second exhibition also had the same approach but it was the impressions of participants in my memory which were depicted in abstract ways. Some viewers mentioned that the artist through her sculptures wanted to highlight the life of a person who had dementia or to express the same in various sculptural forms using different processes. Their level of knowledge of sculpture or digital technology had a small role to play in their perception as they helped to understand the processes better. The way they perceived the condition of dementia as mental illness remained the same and those who did not know much became more aware of it. However, the exhibitions endorsed that people with dementia could express themselves in creative ways in spite of their condition.

Chapter 7: Discussion

This thesis examined various processes of creative engagement associated with sculpture in order to identify and understand the key factors that contribute to the creative potential of people with dementia and the new approaches to co-creative practice while exploring the participants' imaginative thinking. The research focussed on the practice of sculpture-making and the subsequent changes in knowledge and attitudes of the participants. It led to a better understanding of the personal and contextual development in artistic practice and interventions establishing the specific role of the artist as a conduit for sourcing creative expression. In addition, it gave a deeper understanding of the nature and possibilities of practice-based research. As a result, the research led to conceptualizing creative ideas, memories and identities of the participants thereby highlighting the impact of artist-initiated co-creative activities of sculpture-making by traditional and digital methods.

7.1 Practice as research

There is a generative and reciprocal relationship between research and art practice which is important to practitioners in the creative arts, however, there is always a question regarding the contribution of research to knowledge and to the creative processes. There are numerous approaches to research on visual creativity which could come either under practice-led research or research-led practice (Durling, Friedman and Gutherson 2002; Grennan 2015). Research is usually a process that generates knowledge which is considered verbal or textual while research in art practice, where artworks are produced, may generate non-verbal or non-numeric knowledge. The value of such knowledge relies on its result conveying research insight. There are three modes of research associated with art practice - research on the production of an artwork, research on the process of documentation or contextualising an artwork or theorisation of the way the artwork is created by an artist (Smith and Dean 2009). All three may overlap or interlink.

When we come across the term "practice as research", it indicates an association with art practice in an academic environment and may include a range of research activities. Some arguments may however arise on the purpose of practice-led research or practice-based research. Both may address technical or scientific research, process-oriented research or conceptual research on different roles of practice. Within art practice, they may generate innovative methods, provide new perspectives or extend existing knowledge. According to Candy, in "practice- based" research, art practice itself becomes the method of research and the artistic products become the research outputs, and not completely based on textual research (2011), whereas, "practice-led" research means the processes and products of practice are used in theoretical textual analysis do not include the creative work. Academically, both methods reveal the relationship

between theory and practice as types of activity to gain knowledge; theory is restricted to text while practice is non-text.

Research based on practice as an outcome or on the process which requires theoretical explanation places the researcher or the artist at the centre of enquiry. Understanding arises from this process of enquiry, which involves both creative action and creative reflection. The artist intuitively adopts the dual role of artist and researcher and hence the process of investigation becomes both a creative and a critical enquiry. Now, the artist as researcher plays the role of both reviewer and creator. The artistic process and products become part of the research study method rather than just a research outcome.

In this research, the art of sculpture-making is at the centre which included traditional concepts, methods and materials, and digital methods and production techniques. Consideration has been given to the ways of perceiving these techniques and their results as well as reviewing the output that each technique generates. Research with a focus on practice is a synthesis of reflection on the creative aspect, the effectiveness of critical thinking, and social and self-awareness leading to changes at an individual level in art practice.

Within the context of practice as part of this research, the emphasis was on the significance of reflective learning and practice to reframe the relationship of art and dementia. The sculptural processes undertaken for the research and the resultant works created by people with dementia, supported by the artist and volunteers, became the main source of enquiry into creative potential through reflection and critical thinking. Figure 47 illustrates this research process and the main factors that contributed to creative engagements with sculpture by participants and artist, and the responses of the viewers to sculptural creations displayed in exhibitions.

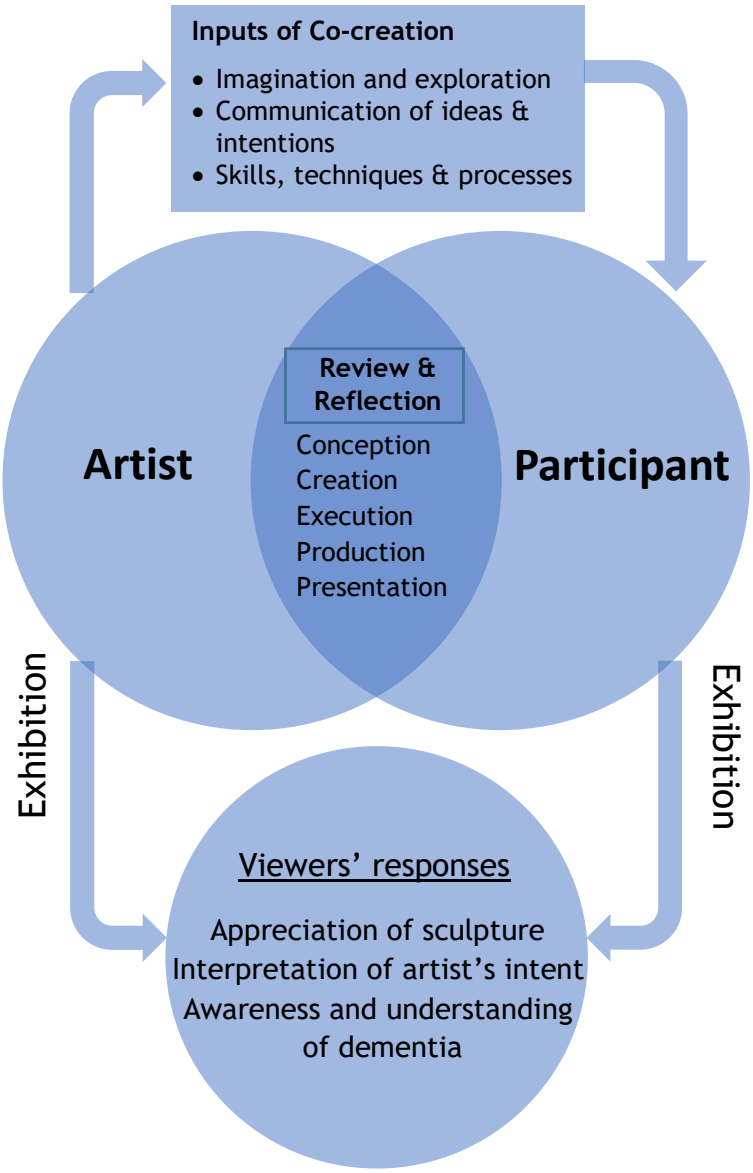


Figure 47: Overview of relation between participant, artist and viewers

As shown in the diagram, the focal point of the study was the practice of sculpture-making and the relationship built between participants who had dementia, the artist as researcher and the viewers. While interacting with participants, the mutual knowledge through reflection and reviewing, and the changing attitudes of an artist-researcher related directly to the art practice from conception to presentation. The assumption was that it would provide a better understanding of the creative potential of people with dementia and of an artist's role as a reviewer while engaged in practical interventions of making sculpture and most importantly - co-creativity.

People with dementia, irrespective of having any previous art knowledge or none, can be inspired and motivated to create art from numerous aspects in and around them. This research took into account different approaches, which have been discussed in Chapter 2. The biomedical approach looks at the diagnosis and treatment of a person with

dementia focusing on symptoms and behaviour; on the other hand, the psycho-social approach emphasises a person's experience of having dementia relating to a wider social circle. A person-centred approach, according to Kitwood, is one way where the person and his/her preferences are emphasized instead of the challenges faced with the declining abilities of the condition of dementia. This was applicable in group settings as well. The latter is considered to have a more holistic approach which has been central to the creative interactions of this research. This approach addresses the person as a whole, respecting human dignity and taking social factors into consideration affecting an individual.

The holistic model therefore acknowledges the status of the body, mind and spiritual wellbeing to create and maintain a healthy state rather than restricting and treating the symptoms of dementia medically. The effort to understand the mental, social and spiritual needs are considered more essential by increasing their awareness of self and also by providing confidence. When this approach is applied to creative practice, the potentiality of the whole self of a person is realised which connects the four realms: body, mind, heart and soul. The holistic perspective on creativity has the transformative quality to affect some aspects of intellectual and emotional development through social interactions.

In this research, the creative interactions with participants were enhanced by paying individual attention, by being respectful, maintaining boundaries and being aware of their responses which led to sculptural creations as outcomes. There were reciprocal influences on the works of the artist involved as a result of this co-creativity which appealed to the artistic senses and became motivation for creation. In due course, the sculptures created by the participants and the artist connected with viewers in the wider society through exhibitions. Viewers' understanding, appreciation or criticism indicated their receptivity to the exhibits based on being mindful of the state of dementia. Figure 47 therefore describes the reciprocal connection amongst the three in this research. These connections and their relevance are further elaborated along with discussions in the following sections.

7.2 Discussion on creative activities with people with dementia

Engagement in the arts has a positive impact on mental as well as general wellbeing of people with dementia, which has been the centre of many evidence-based studies discussed in Chapter 2. Art has the capacity to help people communicate better and stimulate creative engagement. Increased subjective wellbeing was evident while object-handling in museums depending on the amount of sensory and individual involvement (Ander, et al. 2013; Camic, Hulbert and Kimmel 2017). These studies also included instances of individuals who developed an interest in art after being diagnosed

with dementia leading to novel artistic abilities. In addition, neuroscientific studies have found that artists being diagnosed with dementia continued working during the progression of their condition, though changes were found in their artistic style (Mell, Howard and Miller 2003; Crutch and Rossor 2006). The stages in the condition may have distinctive features because of the different patterns of degeneration when a person engages in the creation of artworks and therefore has individual experience (Gretton and ffytche 2014).

The first two studies, the preliminary study and main study, involved participants with different types of dementia who engaged with sculpture. Participants' experiences of viewing, handling and making sculptures using traditional and digital methods addressed the main research question – how people with dementia experience sculpture and its making? Importance was given to their preferences as well as the reason behind selection and intention behind their sculptural creations.

The preliminary study helped in bridging the two types of sculptures - digital and physical - as part of one study. It established an efficient way of capturing the live experience of the moment which turned out to be very enjoyable for the participants as most of them would not usually be exposed to such varieties of sculpture. The effectiveness of the study could be seen from the findings showing positive emotional reactions of the participants in object-handling which confirmed evidence from other studies discussed in Chapter 2. Possibly, due to their expectation of seeing only the physical sculptures as exhibits, reluctance was observed in handling the tablet to view digital sculptures. On the other hand, they spent considerable time interacting with the physical sculptures and were willing to touch them. Findings demonstrated that the tactile engagement is one aspect of sculpture which can stimulate a person with dementia to respond.

The conversations of the participants while interacting with the physical and digital sculptures identified their different perspectives. I have argued that it is not right to generalize the findings. People with dementia can be affected differently by their condition and may respond to people and environment around them in their individual manner. A digital sculpture of papier-mâché depicting joint physical hands looked like two tangled snakes to a participant who found less contrast in the background, foreground and in the shadows. Another abstract sculpture made of rope was perceived as a bunch of *Ferrero Rocher* chocolates.

In the preliminary study, participants were found responding more to the interview questions after touching the sculptures, perhaps due to the sense of touch enabling them to be more receptive. There was a pattern which they instinctively followed while looking and speculating on the materials, feeling the texture and interpreting the forms

which they associated with something seen or experienced before. Beside their physical engagement they were mentally trying to recollect and be reminded of an experience from their past. Therefore, the preliminary study also confirmed that the sculptures became their source of contemplation and recollection.

Interestingly, the abstract sculptures attracted more attention and curiosity. However, representational figurative works were still their preference. Those participants with art background had retained their understanding of terms being used such as “assemblage”, “asymmetrical”, “relief”, “buffing”, “armature” and even “mould”. These terms had to be explained to some of the other participants.

Similar to the seven participants, the conversations of the three control group participants also focused mainly on the sculpture in front of them, though their experience and responses were spontaneous. There was definitely an increased awareness of self and environment, willingness and readiness to ask or explore further about the sculptures exhibited.

It was observed that the interaction with the physical sculptures was longer while handling and getting a feel of the texture compared to the digital ones. The reason could be because people with dementia have a tendency to work slowly depending on the time it takes for the information to be processed and registered in their brain. To capture participants’ responses it was important to have timely dialogue while they were engaged in the activities keeping in mind the very nature of short-term memory in people with dementia. However, certain sculptures carried more meaning than others and their comments were normal like any other person without cognitive impairment. An interesting observation was that towards the end of the session after seeing varieties of sculptures, they remembered to point out which sculptures they would like to create. The reason for remembering these sculptures could be because of their gaining an insight, or associating with something familiar or simply liking the look of it. The study confirmed that the sculptures the participants saw were not what they had expected; few had the expectation of seeing stone or metal sculptures.

Another noticeable finding was that the conscious realisation of the presence of a sculpture in real space and virtual space was a challenge for the participants both in the preliminary and main study. They had to pay more attention which required greater coordination of their efforts and senses. Holding a tablet and looking at the screen and moving images facilitated drawing their attention and interest. Similarly, the small sized physical sculptures could be viewed, handled or created as a whole form which they easily could hold or keep in their lap to have a look or work with. The close proximity to the sculptures was an advantage in helping them to be consciously aware of the form in its totality.

Reflection on participants' sculpture-making

The decision to involve people with dementia with sculpture-making in the main study was based on two features. Firstly, the assumption that everyone has the potential to be creative, regardless of previous knowledge, training or any experience. Secondly, the preliminary study had provided sufficient evidence to indicate that there was a general interest in making sculpture as all participants at some stage of the viewing and handling of objects had asked how the sculpture was made. As a result, the main study promoted effective art experiences, which explored the artistic capabilities of people with dementia with the aim of helping them pursue their ideas and vision to express their uniqueness.

The structure of the main study was based on findings from other studies showing evidence that art experiences offer people with dementia an opportunity to communicate, enhance quality of life through mental stimulation, build self-esteem and strengthen the ability to take their own decisions. In addition, participation in a creative activity gives a sense of pride and a feeling of doing something worthwhile. Consequently, completing an artwork leads to a feeling of achievement and a sense of ownership.

The main study provided valuable insight into the minds of those living with dementia when they engage with the creative process of sculpture making. The focus remained on art practice demonstrating their creative endeavours. According to Cohen, participation in any art activity is a social engagement for an individual, with positive influence on the mind and the body. He believed that "The continuation of imagination and engagement provides intervals of good feeling in the face of overwhelming adversity. This is what art and creativity can provide in the most challenging of situations" (Cohen 2006). With ageing and dementia, understanding or making sense of something using memory sometimes become difficult but it is the imagination which persists to make things more enjoyable.

Imagination being a key factor associated with art practice, it was evident that it allowed participants to visualise their ideas or thinking without any boundaries. They were encouraged to imagine what they wanted to create and became aware of their vision by expressing verbally, by drawing or painting. Another important factor, which the participants required for their creative expression, was the involvement of emotions. The pleasure of creation is highly emotional; looking at a form coming into existence is almost like giving birth (Ross 1994). The artwork itself may be an outcome of emotion and feelings expressed by the participant. These are subjective phenomena but the pleasure is releasing the emotions into the artwork.

Possibly the condition of dementia and other age related health issues could be a hindrance to creating artistic outputs and therefore participants had to be assisted and guided through the stages of art practice. Therefore, the need to implement co-creative methodology became necessary. This was a challenging experience for any art-based initiative as it was very difficult to ascertain the levels of pre-existing knowledge of the participants. Thus, the sessions were planned accordingly keeping in mind that it was probably the first experience of the participants to create sculpture. Findings from the interviews showed that as the sessions progressed participants recollected the previous art engagements of being to exhibitions and of using the materials for their creations, which made it easy for them to accept the ways of working with the sculpture-making processes.

Participants required support even with familiar materials such as clay and also with new methods of using 3Doodler and digital methods to generate and to execute their ideas as a form. This is where I had to be careful about their creative constraints and give them relevant guidance, as and when required. I adopted a method of asking them questions about their intentions and then provide examples verbally. Conversation was the first point of interaction. This was the stage where they started developing their ideas and the conversations around the table with other participants and volunteers gave them stimulation. Participants unintentionally motivated each other despite their condition. Sometimes in these conversations, they shared interesting things they had observed or incidents from their lives. It was found that sharing promoted communication and consequently improved their social skills.

I followed a particular method in order to teach the skills whereby I demonstrated how to use the materials and then gave instructions while the participants started working. My first verbal instructions were to make them aware of the form they wanted to create and other possibilities. It was a process of reviewing and reflecting the ideas which made them think. Sometimes, this did not work because there was less concentration or interest. In such cases, I had to show them how to make the form by giving some options and a brief demonstration and asking them while making if it looked somewhat like what they wanted to achieve. This way I confirmed that I was not putting my input in their creative ideas and their creations were entirely self-initiated.

The option to use different colours in the creations made participants interested to try the handheld gadget - 3Doodler pen. Moreover, forms they created easily associated with the linear quality of the initial pencil drawings of their ideas and the filaments coming out of the pen made their drawing 3D. Although the process was new, it offered a challenge which raised the level of curiosity compared to the use of clay and papier-mâché they worked with in previous sessions. This led to the next process of digital methods with the purpose of finding out the difference between perception and approach

in making digital sculptures which had mixed reactions from the participants. Virtual space was on the other end of the spectrum and unreal and hence the sculptures' existence was imitation of the real. Participants placed themselves in the real world which made them see it from their position. Although they created virtual sculptures using Android tablets, the forms were not generally retained in their memory compared to the physical forms of clay and papier-mâché made earlier.

In the virtual realm sight and touch function differently and the lack of sensory involvement, which participants wanted to feel physically, was one of the differences. The way the digital tools could go backwards and forwards to remodel the sculptures often confused them. This is where I had to work with them and co-create to make sure what they wanted to change and how. Therefore, when they went a step backward to make some alteration I was there to guide them to go forward again. With the traditional methods of making sculpture, they were less hesitant to take decisions. They were subtracting and adding materials taking spontaneous decisions while making physical sculptures but they found it difficult with virtual sculptures. They developed ideas while working and after completion of the virtual sculpture, they described their creation. Imagination and vision worked side by side and the combination had a very satisfying result for the participants.

Although participants found it difficult to describe abstract sculptures, they nevertheless felt it was thought-provoking and showed much more enthusiasm than while creating them. The explanation evoked different responses in the group and sometimes added a touch of humour. The reasons could be that it accorded them an opportunity for self-expression and subsequently their self-identity. As we know, the condition of dementia sometimes causes a feeling of being unsettled, affecting the personality of the person. This kind of self-expression of explaining their artistic outcome gave a stable ground where they were in control as a creator. It was not an experience thrust on them but happened naturally through discussion around the table by including everyone in the conversations.

The use of virtual space in artistic creations comes under non-traditional art whereby digital technology is used to view, make or produce art. With new methods and technologies emerging every now and then there is more scope to introduce novel ways of adopting these technologies for elderly people. The use of digital techniques have a different approach to the general notion of sculpture making techniques. Portable accessible digital devices such as tablet, cameras or even phones are easy to hold and manage with both hands. Especially for the elderly, the small screens remain within the range of their vision which helps in holding their attention and interest.

The possibility of instantaneous outcome and reduced time in execution of a conceived idea enables people with dementia to focus more on contemplation and developing their creative ideas. Their ideas can be stored and reviewed at a later stage for further reflection and manipulation. This was evidenced in this research which could be applicable to other elderly people in the society introducing them to novel digital methods of making art. Consequently, a positive attitude develops for continued engagement with technology while learning.

Learning is very important for active ageing and the educator has the opportunity to develop strategies to encourage them to continue learning. A new method of making art using digital tools requires communication between the educator and the learner which encourages social interaction and information exchanges very different from using physical tools and materials. The creative approach to engaging with virtual space using digital technology initiates new vocabulary and a different way of communicating the vision and ideas of a person. These are not restricted to the digital tools being used but also to the emotional experience of the individual, which could be positive or not so positive. For the elderly digital technology provides a uniquely impactful experience of looking and thinking differently and from another perspective, away from the predictable and familiar traditional methods of making sculpture.

The various possibilities of new forms of interactions using digital methods are immense which was evident during the workshop sessions. For elderly people it becomes easier to acknowledge digitally produced 3D forms as sculptures because of their physical presence similar to those produced by machines and mechanical tools. Away from the virtual space, the digitally created physical sculptures on the other hand provided another experience. Adzhiev et al explained the use of digital technology in making 3D forms and the creative cycle from physical object to computer model and vice versa, using computer based algorithm and program or additive or subtractive manufacturing technologies (Adzhiev, Comninos and Pasko 2003). The combination of these digitisation processes set up the foundation for digitally created sculpture. Based on their projects they argued that "computer-inspired and computer-mediated physical sculpture" could lead to experimental discovery with minimal human interventions. Computers with artificial intelligence would change our concept of sculpting techniques.

Similarly, Gabriela Celani highlighted the available digitisation methods which are used for digital manipulation, digital processing of physical 3D forms, computational and mathematical synthesis and combination of all three (Celani 2008). She gave justification by giving an example of a sculptor's work – creating a work in clay and then 3D scanning it which can be digitally manipulated and produced using additive manufacturing technology. Another way is when a sculptor can use algorithm or 3D

modelling software to generate a form, manipulate and produce it digitally which then can be altered manually using traditional tools.

The above processes used in the main study for making digital sculptures initiated my using digital technology for production. The purpose was to find out how participants would react to see their ideas being developed through computer which would be inclusive of production as well. The virtual 3D models I created for them according to their drawings, maquettes or verbal instructions were viewed in the same way participants had viewed their own creation of virtual sculptures on tablets. 3D printed sculptures had a physical presence similar to other sculptures participants had seen and created before. The difference was the feeling of detachment as expressed by the participants. They felt it was machine made or computer-based production which lacked human imprint. One participant, David, commented, *"I can see what it is (a boat with waves) and you got it right. But, I cannot feel it."*

7.3 Reflective practitioner

The interactions between the participants and the artist which instigated and facilitated co-creation, were the main source of inspiration for my sculptural creations mentioned in the earlier sections of this chapter and illustrated in Figure 47. The research study is based on art practice especially focusing on sculpture-making which generated knowledge and understanding of artistic outcomes of these interactions. In Chapter 6, I presented the conception of sculpture in different ways according to emotional responses and changes in my outlook as an artist researcher. The process of creation and production of sculptural forms was presented as a systematic inquiry into the art practice which became a major contribution to this research. Consequently, these creative responses combined with the collaborative engagements brought conceptual changes.

About art practice

The questions which arise here are - what does art practice entail? Is it about using tools and producing an artwork? Or is it about the meaning expressed in an artwork? Is it the outcome which pre-determines the art practice? With all these questions in mind, my involvement in this research prompted me to explore my own art practice while I worked with different groups of people with dementia. This is where research on my creative approach started, with the perspective and subjectivity of an individual sharing time and space with participants and positioning the artistic practice based on personal experience.

According to Graeme L Sullivan, "Art practice can be seen as a form of intellectual and imaginative inquiry, and as a place where research can be carried out that is robust enough to yield reliable insights that are well grounded and culturally relevant"

(Sullivan 2006). He suggested that it is the artist who has control over a creative endeavour from its conception to presentation which contributes as forms of knowledge. Artist's creation with a purpose to review positions practice as a form of research which includes creative and critical practice.

While considering art practice as an inquiry, an argument arises over the emphasis of material or conceptual thinking in a research. The former happens by handling materials in practice which actually establishes the logic of the art practice (Bolt 2006). It is important for an artist to have control over the material in use without which an artwork cannot exist. The knowledge that comes from working with materials is pertinent to creative art research and this is generally a dominant factor for artist researchers. I have argued that knowledge of artistic tools, methods and techniques is required to understand art practice and generate something new to emerge, while conceptual thinking works on the knowledge of the materials and prompts critical thinking. The reflective and contemplative knowledge that arise can contribute to artistic research and have a strong hold if we position them together which was the rationale for this research study.

Creative insights

The experience of working with a group of people may sometimes enable unusual creative outcomes and see their thinking and personalities emerge through their creative ideas. In Chapter 6, the sculptures created during the main study are described with a few examples. The first material introduced to participants was clay and the positive response I received made a deep impression. Back in my studio, my first attempt was also in clay and turned out to be smaller in size similar to the ones participants were handling in the sessions. The conscious effort of making a sculpture from memory made it more enjoyable. The recreation of what I perceived, processed and recorded in my memory came from my close association with them revealing the physical presence of each participant.

The bonding with the material brought me closer to the figurative descriptions of the participants I was creating and wanted to know whether I would feel the same if the sculptures were made digitally. I realised digital technology offered me more scope, including the use of sensor technology, to depict the emotional interactions and the relationships built with my participants. The sensors worked almost similar to the memory of people with dementia which could be triggered by social or creative interactions, inactive and still otherwise.

The sculptures represented not only my relationship with them but the impact on me at a personal and an intellectual level. Having a different cultural approach, the collective consciousness of mutually shared space and the emotions attached had formless entities.

The ideas and attributes originating from these are usually represented in a form, which leads to our belief in idol worshipping. My creations carried meanings being figurative as well as symbolic.

The second phase of my art practice started after few months of creating the above mentioned sculptures for an exhibition. I realised my interest in visualising figurative sculptures was fading away and instead I was drawn towards abstract formation which I have explained in Chapter 5. Recollecting the participants I had worked with for the last three years, the emotional attachment with them and their personalities, stories of their life and the shared moments of working together remained vividly in my memories which I could not ignore.

This change in my art practice made me revisit my earlier works based on *Yoga Asanas* and I found my creations were non-figurative but still had the essence of *Yoga* postures. Using traditional and digital methods and working in physical and virtual space enabled me to look at the sculptural creations differently. However, I found my ideas remained the same intending to combine the two methods of sculpture-making – digital manipulation and traditional method using physical materials. With the range of sculpture-making processes and display methods included in this research, my intention was to "deal largely with the appropriateness of medium in relation to process" as described by Keith Brown, professor and an eminent digital sculptor in the UK (Harris Museum and Art Gallery 2012). Therefore, my sculptures seek to address the contemporary relevance of amalgamation of traditional and digital methods and also the resonance of the narratives of interactions with participants depicted in the creations.

A practical approach to co-creativity

Investigation into artistic research presents deeper understanding of the nature of research and the relationship with artistic practice and creation. The above section described the studio practice of an artist which became a means as well as an outcome of the study. The artistic productions of the sessions were achievable because of the co-creation methodology adopted right from the beginning. The participants required support to visualise and develop ideas and execute them in sculptural creation which initiated the implementation of co-creative practice of working together which I have already described in Chapters 5 and 6.

The shared decision-making was one of the important contributory factors. It enhanced the creative experience of people with dementia. With my artistic approach and knowledge, I was able to help the participants make decisions. Imagination sometimes made them develop unrealistic or impractical ideas and this is where the shared decisions helped with feasibility. A participant wanted to make an exact replica of a piped organ with very little creative input from him. However, after discussions, replicating the form

and then placing them at different angles made a new composition. Imagination and vision of both of us had to go hand-in-hand for the final decisions to be made.

As evidenced in the sessions, co-creation helped in finding ways and alternatives in situations not in our control. For the participants, dementia and other health related issues sometimes restricted them in their expressions. Adding another approach to look at their self-initiated ideas helped the participants to have a wider range of options and to develop another point of view. Similarly, it helped me in understanding their particular behaviour or interest pertaining to their personalities and artworks.

Another noticeable factor was the realisation of shortcomings. This means while working in a collaborative environment, the limitations as well as the qualities of a person became visible. The shortcomings of the participants were mainly due to the visual, physical or cognitive difficulties they faced due to their condition. These therefore required the other person in co-creation to support or intervene where required, throughout the conceptual thinking process and not just limited to the process of making sculpture. Coming from a different cultural background, I had limited knowledge of some of the experiences of the participants which they expressed during our interactions such as their life during World War II, the song *Kiss me Goodnight* or how important was *Women's Institute* for women.

Lastly, the findings from interviews established that co-creation led to increased engagement. People with dementia lack motivation and by working together, the possibilities of meaningfully engaging them were higher. Conversations initiated social engagement in the group and awareness of each other in the creative space. This led to building of relationships while interacting personally or with the materials used in the sessions. The involvement in the production of sculpture became more engaging as there was another person to provide support, share ideas and communicate. At the same time, my engagements with processing their ideas increased too as I became conscious of the person while building my subjective opinion. With close association during the sessions, their personalities became visible leaving a lasting impact on my memory.

7.4 Viewers' interpretations

The purpose of exhibiting artworks in the public domain was to present viewers with specific forms of expression and to allow individual interpretation of the meanings. As they hold unexpected views and differ in their interpretation and understandings from the artist's experience their responses were an integral part of an exhibition. Viewers are often classified according to their reactions to any art form: firstly, those with traditional outlook who refer to the history of art to justify any work, secondly, those who rely on the definition of what art should be, and the third category includes viewers who

establish their decisions on perceptual qualities of the artwork. To explore how viewers respond to artwork opened up the relevance of perception as a mode of enquiry.

In this research, it was important to associate perception and reality in order to refrain from assumptions. Therefore, for viewers to understand the meaning behind the creations, visual intelligence was required for a very basic understanding. The way an artwork is perceived may not be exactly the way it is seen, it mediates between prior knowledge and experience of the viewers.

The first exhibition included sculptures created by participants during the main study along with my own creations explained in Chapter 6.1. This exhibition, *Sculptural Revelations,* was an attempt to present various artistic expressions of people with dementia to viewers and investigate how these sculptures were perceived. The subject matter of the sculptures created by participants had a variety - some from their imaginations, others from their memory of the past life and other from their present life, while my sculptures drew attention to their lives as individuals living with dementia.

Figure 47 shows the interrelation of sculpture with artist, participants and the viewers. The experience of sculpture indicated three different responses of viewers - firstly it was based on their reactions of seeing varieties of sculptures, secondly they tried to interpret what the artist wanted to depict and thirdly the meaningful messages conveyed through sculpture how a person feels and experiences life affected by dementia.

The findings from the exhibitions clearly showed the growing awareness of the condition of dementia and those who did not have any knowledge acknowledged a change in their perception after seeing the exhibition. The viewers could sense the experience of people with dementia and art could give them a lot of meaning and satisfaction in their creative expressions. Some of the viewers found the subject of dementia very sensitive. One of the reasons was knowing someone who had dementia or seeing the deteriorating condition of the person or family members. As a result, these experiences were very personal. The other reason for some viewers was the emotional expressiveness of the sculptures and realisation of the efforts to reach out to the public through art. The latter was considered in a positive way whereby the generic stereotype of sufferings from the condition of dementia was addressed by demonstrating what they were capable of.

The sculptural creations were praised for various reasons. Although all the sculptures were expressive, most preferred the representational works with the description of the titles regardless of the process used. The display of variety of traditional methods using clay and papier-mâché along with digital sculptures created by participants was found interesting. The use of 3Doodler pen and digital sculptures attracted lots of attention and

raised curiosity. There was an element of surprise in the responses of some viewers, the reason probably was that people look at the condition but not the person beyond it.

I received several comments on my exhibits regarding the use of digital technology as a means of storytelling of the lives of the people with dementia.

One viewer commented, *"It is an interesting idea to combine dementia - an old people's condition with new techniques and have people reflect on this. I liked the sculpture/screen displays at the end, it reminds you that each person stand as an individual alone and that they have a life that comes fully into view only when you choose to look & engage. Digital media is an exciting method of portraying a person's story/personality which really has come to life here"* (Female 46-65 years).

The clay sculptures were compared with the 3D printed ones and had a mixed reaction. Some of the viewers found the clay sculptures had more character in comparison with the digital, the traditional had artist's impression and each piece was unique. They preferred the emotional sensitivity of sculptures in clay because it felt like a direct expression from the artist and the digital method was more of a technique portraying a person's story or personality which was fabricated and not real.

The next exhibition, *Intimate Conversations* followed a year after and included my works using traditional and digital methods and had a short duration compared to the previous exhibition. The sculptures created are explained in Chapter 6 and the previous section in this chapter. The responses of viewers who had association with people with dementia and their overall experience of sculptures were influenced by their pre-existing knowledge of the condition and people involved. They were able to recognise some of the behaviours of the people with dementia which they could relate to my texts accompanying the sculptures.

Although viewers' level of knowledge of sculpture did not influence their responses to the display of the sculptures, their level of knowledge of digital technology showed some impact on their responses to virtual and AR sculptures. Unlike the digital sculptures, viewers compared the formations and tactile qualities of the materials used and rated according to their personal preferences, with wood as a material being appreciated the most.

Similar to the previous exhibition, viewers showed awareness of dementia in their comments. The number of viewers who expressed their surprise at the suffering and the limitations which people with dementia experience and who had hardly any knowledge about dementia were negligible.

While identifying the intention of the artist, the majority mentioned the exhibition was about feelings and experiences of the artist. Others considered the emphasis was on methods adopted to create sculptures, the making processes and the utilization of different materials and techniques which conveyed different sculptural outcomes. For some it was just about visualisation and imagination for the sake of creativity. Mostly, sculpture was considered a very expressive medium, though there was still a preference for traditional materials and methods used. The digital sculptures were acknowledged for their unique contribution to highlight the stories of dementia. The sculptural installation and AR sculptures which amalgamated traditional and virtual methods, were considered very effective and participants' comments indicated that they considered these works reflected succinctly artist's interpretation of her experiences using different sculpture-making techniques.

7.5 Implications

This research has several significant implications for artists and researchers involving and developing sculpture-making processes for people with dementia. There has been an increasing interest in gallery-based opportunities and art interventions which gives an impetus to this research based on engaging with sculpture using traditional and digital methods. The experience of handling and making sculptures is pivotal in this research and the participants' responses provide evidences of their willingness to communicate and their attitudes towards imaginative thinking and creative outcomes.

The preliminary phase of the study helped in understanding their conditions of dementia while they engaged with sculpture. Besides its significance for research purposes, this process of viewing and handling could be utilised by carers or family members. The main study focused on the creative endeavours of people with dementia and the effectiveness of each process of making sculpture which has the potential to be used under expert guidance of artists as well as individuals who are non-artist.

The creative process

Besides demonstrating impacts of a range of sculpture-making processes, the findings of this research determined specific activities in which the participants were not only stimulated but also engaged with a lot of interest. Teaching new ways of interacting with sculpture is challenging due to the condition of dementia and other health related issues. If the art practice is kept away from just learning standard skills and taken to a more exploratory person-centred approach then the possibilities are that the participants may benefit from gaining new knowledge and also exploring their creative imaginations despite their conditions. This could be achieved by way of a collaborative relationship between the artist and participants which has been described in this thesis.

The co-creative methodology adopted in this research provides a new way for artists, art-therapists and art researchers for meaningful engagements with dementia in different settings and environments. The research has highlighted the importance of looking at creativity not from the point of view of an educator but also from the perspective of a learner who has dementia. The aim was to blur the boundary between educator and learner and to enable the involvement of carers and family members to see the positive impact of co-creative engagements. In this research the experience of using traditional methods indicated a sense of ease dealing with participants' ideas and materials due to either familiarity or preconceived expectations. On the other hand, the digital methods provided them a challenge to perceive sculptural forms differently at a new level of understanding. The research findings offer a way of using both methods and bring them together for creativity and to act as stimulants.

Viewers-exhibition relationship

The art experiences described in this thesis are presented in a way so as to develop new perspectives and perceptions of people with dementia, shaping its understanding through creative forms and presenting it to the public to be recognised and acknowledged by viewers. The research highlighted how the artworks affected the viewers and the shift in perceptions of the relationship of dementia and arts to a symbiotic approach rather than a polarised one.

Acquiring quantitative and qualitative data in exhibitions has an added advantage of developing creative interactions in the future. In this research the data showed how works created by people with dementia and the artist on the subject of dementia affected the viewers. Firstly, the exhibitions provided perfect environment for getting different responses from different age groups and backgrounds, with some experience and knowledge of people with dementia or without any association. Exhibiting in new venues would help in reaching new and different viewers and the data collected through interviews and questionnaire would become instrumental to addressing any limitations and to provide new challenges of viewing novel ways of exhibiting sculptures using traditional and digital methods.

Viewers' responses allow evaluation of subjective art experiences which help in understanding if there are any differences or similarities of artist's intentions or desired outcomes on the displayed exhibits. Accordingly, these experiences could suggest ways of investigating the effectiveness of sculpture as a means to convey meanings associated with the lives of people with dementia. The response of the viewer as a perceiver depends on the salient features of the exhibits at a particular time and space which could be either instinctive or reflective. The research into the viewer-exhibition relationship based on their emotional or judgmental experiences could be time specific or site

specific. The two exhibitions as part of this research provide a foundation for artists, curators and researchers to modify and accommodate a variety of factors which may be relevant from a contextual and cultural perspective.

Chapter 8: Conclusions

This thesis reframes the association of art and dementia by systematically approaching and implementing co-creativity in order to understand and document the various ways of interactions with sculpture by people with dementia. An in-depth study of developing conceptual ideas of the participants and the artist suggested the practice of sculpture-making as a possible source of creative engagement, motivation and increased productivity. This research has argued that alongside the traditional methods, new methods of making sculpture specifically using digital methods, have the potential to develop an individual's imaginative thinking offering a new mode of interaction. Consequently, it challenged the perception of viewers to understand the meaning behind such creations. Investigating the perception of viewers at two exhibitions of sculptures revealed the growing awareness and consciousness about dementia in the public and the need for meaningful creative exposures.

8.1 Research questions addressed

The first research question was as follows: How do people with dementia experience sculpture and its making?

This question was addressed in chapters 3 and 4. A preliminary study was first conducted to investigate the perception of physical and digital sculptures by people with dementia as described in Chapter 3. It mainly explored the possibilities of stimulating participants with mild to moderate dementia to respond to various kinds of sculpture by viewing and handling it. Findings from the interviews showed that the approaches to the sculptures by the participants were subjective which largely depended on their personal preferences - either from past experiences or was spontaneous at that particular moment. However, it was noted that the tactility of the sculptures played an important role enabling them to respond and converse freely. The study confirmed that the sculptures acted as a source of communication, reflection and reminiscing. The comparison of the responses between participants with art background and control group participants who were artists but did not have dementia, identified the differences in their experiences. The responses of the former was slower due to their condition and they commented more on what they were seeing, relating mainly to material and size, and the latter on what the form represented and the meaning behind the creation.

The different experiences of the participants in the preliminary study and the evidence of their interest to know about the process of making formed the basis of the main study described in Chapter 4. Seven participants engaged in a six-month study which included visiting galleries, handling artefacts and creating sculptures for an exhibition using traditional and digital methods. Findings from the interviews indicated that the differences in the process of their working were associated with their condition and

inclination to engage in the physical activities of sculpture-making. The group setting and the creative environment helped in motivating them to engage more and also assisted them in recalling either the material being used previously or the sculptural outcome during and after the sessions. Although learning a new process was challenging for some participants, it was evidenced that my engagement with them as an artist, educator and collaborator and implementing the co-creative methodology encouraged them to pursue their creative endeavours and not give up.

The second research question was as follows: In what ways does the process of co-creating sculpture with people with dementia influence the artistic practice of the professional artist involved?

This was addressed in Chapter 5 by describing my art practice while interacting with the participants in creative activities. In the context of my varied and diverse approach to making sculpture, my works revealed the deep emotional impacts of association with each participant in expressing their unique qualities and characteristics. My responses were new and often unpredictable perhaps being from a different cultural background, which challenged my own perspective and assumptions in the creations. The figurative formations prepared from memory and also by referring to pictures, conveyed different meanings to the viewers with the possibility of offering new ideas or changing their thoughts and perceptions. After a few months of working with these figurative creations, there was a natural transformation in my art practice which is elaborated in Chapter 5. The conception of the sculptural formations became abstract demonstrating each participant I worked with and reflecting fragments of memory of their individualities. This completely changed my way of working even while experimenting with other physical materials such as wood and fibreglass which was evident in the sculptural outcomes. Similarly, the digital methods undertaken were manipulated in such a way so as to bring out the expressiveness of the dynamic interactions. As a result, the co-creative practice undertaken affected me intellectually and emotionally which later manifested in the sculptural creations displayed in a public exhibition.

The last research question was: What effect do works created by people with dementia have on viewers? In what ways can sculptures based on the subject of dementia affect viewers' perception of dementia?

This question was addressed in Chapter 6 by analysing viewers' responses to the two exhibitions held in public space. The first exhibition, *Sculptural Revelations* included works of participants as well as my own creations which addressed the first part of the research question. After a gap of one year, the second exhibition *Intimate Conversations* was my solo exhibition. From the results, it was found that viewers' perceptions of the exhibits as well as of dementia as a condition were influenced by various factors. Some

were personally involved with members in their family who had dementia, some had friends or acquaintances with the condition and a few had little knowledge. Coming from different backgrounds, they had different levels of knowledge about sculpture and digital technology. However, results from the questionnaire indicated that the evocative works and methods of display significantly influenced their perception of dementia.

Viewers' approaches to the exhibits in terms of identifying and interpreting the meaning behind each creation are explained in the qualitative analysis of both exhibitions in Chapter 6. Results showed that rather than focusing on the deteriorating dementia condition, there was enhanced awareness and appreciation of the participants' abilities to create art, which the viewers found suitably expressed in the exhibited sculptures. Consequently, their experiences ranged from empathy for the growing incapability of the participants, to the pleasure of seeing something quite unique, meaningful and expressive. Viewers also mentioned about their empathy for the participants involved and appreciating their creative side about which they became aware of and noted from the various artworks created using different methods on the subject of dementia.

8.2 Limitations and future work

Every research study has some limitations and in this case it concerned data collection methodologies of the preliminary study and main study. The identity of the participants who were involved in both studies could not be revealed due to ethical and confidential issues of the condition of vulnerable people with dementia. It depended entirely on the researcher to share information including sensitive information about their personal lives which was important to be included and represented in the sculptures produced. The quality of the data therefore depended on the extent and sensitivity of the information. Moreover, the attempt to quantify certain aspects of both studies was another limitation. As it is difficult to evaluate creativity, qualitative data was therefore used to categorise participants' responses and realisations.

Engagement with sculpture-making or any other form of art could be seen during the workshop sessions. However, these engagements could have effects on participants' personal lives away from the workshop environment. These experiences were neither tangible nor time-bound and may or may not have reflected on their behaviour and people close to the participants could sometimes feel the difference. Being away from the environment of creative engagements, there were limitations to studying these changes.

Another limitation was the sample size of the main study. Because of the condition of dementia, it was unpredictable whether a participant would be likely to withdraw from the study. It was even more difficult to ask for commitment to a long-term study. The main study was conducted in group settings and not on a one-to-one basis. A bigger

group and for a shorter duration may have yielded varied responses which would have required the support of more volunteers. Even the sample size of viewers of the exhibitions provided some limitation to this research as the number of visitors at both exhibition venues was unpredictable and there was a difference between the sample sizes described in Chapter 6 about the public exhibitions. A comparative study on their perception could have been possible if the number of viewers were of almost equal number.

In this research, only participants who could give written consent to participate in the preliminary study and main study were selected. Almost all of them had mild dementia and were able to communicate verbally. For future research, people with a moderate or severe condition could be included, with a possibility to adopt new techniques and methodology for data collection. The working methodology to get responses from them and to communicate with them for creative outcomes might generate different results. Such a study may determine if a similar sense of sharing and co-creative approach could develop as it did with this study.

The long-term effect of art activities can be investigated in further research. Another qualitative study could be conducted after a certain period of time to investigate what the participants remembered of the processes or outcomes. It would be interesting to determine their appreciation or attitude towards sculpture and its making and whether they are still interested in being involved. If a study is conducted, with a set duration of engaging participants and then no creative engagements at all, it would help in doing a comparative study of effects on their participation and creative outcomes.

The main study was held in a place where there was easy access to visit other art galleries in the building. This was based on evidence from other studies about the stimulating environment of a museum or an art gallery. Changing the environment may have a different outcome. In future, similar studies could also be conducted in a care home setting or some other place which does not have an art-related environment. It would be interesting to know if the working space where they interact or engage would still remain a source for inspiration.

The materials provided to the participants to create sculptures had limitations which restricted them to learn the skills and techniques. Traditional methods of wood carving and metal sculptures are some examples in which participants showed interest, but they could not be included in this study because of the time frame of completion of works coming out from such processes. Findings from the main study show that participants are eager to take on challenges in spite of their condition. Careful planning is required to include more sculpture making processes both traditional and digital. The virtual sculptures created by participants in the main study could have been produced digitally

using 3D printer. Access to such equipment would make it easier to see the same sculpture in virtual and real space. Consequently, it would make the process more accessible and visible to other art practitioners for further research.

This research has identified various techniques, strategies and methods used by the artist-researcher to stimulate and promote the creativity of the participants who have dementia and other health conditions. The knowledge of recent trends in art and technological advances is a prerequisite for an artist to teach, practice and place the research and artistic outcomes in a contemporary art scene. Nevertheless, the artist as an educator also requires a theoretical framework which would help to emphasise the creative and societal values of these collaborative engagements.

The concept of co-creativity could be further developed by including more professional artists, thereby generating new opportunities for more creative engagements. The professional knowledge of an artist enables a practical and achievable approach. This methodology has been used recently and requires a framework for participants and artists to work in a shared space. Therefore, the concepts of co-creation, participation and shared spaces need to be in the foreground, which requires working with people with dementia and not working for them. This can contribute to the idea of "Arts on prescription" in our society, giving credit to artists and generating more awareness of the benefits of engaging in arts. "Arts on Prescription" also known as "Arts on referral" involves a referral process directing people to a service or a source of support by the health or social care practitioners. While describing non-clinical community interventions, Chatterjee et al explained in detail, "Social prescribing is viewed as a means of addressing mental, psychosocial, or socioeconomic issues, and enhancing community well-being and social inclusion. As such, it is an emerging strategy for tackling health inequities through partnerships between primary care and third sector organisations" (Chatterjee, et al. 2017). Art-specific aspects of the programme and social prescribing of art interventions enable possibilities to develop new knowledge involving a wider circle of mental health professionals and creative professionals, resulting in being openly accepted in the society. Although in the UK there are a number of such programmes operating, it now requires global initiative.

Although there are difficulties of recruiting participants who have dementia which may be encountered in other countries as well, there are immense possibilities to consider the participative and creative encounters of sculpture-making in the different settings of other cultures. In this research the artistic exchanges between the groups were inspiring, which requires testing in other set-ups with different cultural backgrounds. This research has made me hopeful to engage with people with dementia in India and be a part of facilitating the growing awareness of the condition in the country.

In this research, it was realised that the viewers' responses contribute significantly to understanding the receptivity of sculptural outcomes from the co-creative interactions with people with dementia. It would be useful to gather more data from exhibitions held not only in galleries and museums but also online, to reach wider audiences from different backgrounds, age groups and cultures. Viewers' perceptions of the sculptures created using traditional and digital methods are changing, as digital technology has slowly become part of our lives and is constantly progressing. These changes are in the production and presentation of an artwork as well as its reception. Efforts are required to highlight the responses and reactions of viewers and to consider how their consciousness and awareness are having an effect on the definition of contemporary sculpture. This would be very useful to artists in understanding the changing perceptual qualities of sculpture, helping them to position their creations with the assistance of collaborators for production and curators for presentation.

Working with people with dementia and exhibiting about their lives are two issues which sometimes emotionally challenge the artist who is making the art and the viewer who is looking at it and trying to make a meaning out of it. It also challenges their intuitions regarding the limits of what could be called art and the notion that an artistic outcome is about the process and not the materials. However, in this study while engaged in co-creation, each became very important and had their own contribution to the final sculptural forms created. The active engagement with materials of traditional as well as digital methods somehow positions itself in the broader research area of the significance of art today. The focus shifts from the creation of new art to adopting new methods in physical and virtual space. The association between the products of artistic activities and the very purpose of art requires further investigation not just for artists but also for those interested in art engagements.

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Appendix A: Preliminary study consent form

CONSENT FORM

University of Kent

Title of project: Perception of Digital Sculpture by people with Dementia: Investigation into therapeutic potential

Name of investigator: SUMITA CHAUHAN

Participant Identification Number for this project: Participant #

Please initial box

1. I confirm that I understand the purpose of the study. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐
3. I am aware that my responses will be used as data and could be used for publication. Data gathered in this study will be confidential and anonymous regarding my personal identity. ☐
4. I agree to take part in the above research project which will be video recorded. ☐

Name of participant	Date	Signature
Lead researcher	Date	Signature

Copies:

When completed: 1 for participant; 1 for researcher site file; 1 (original) to be kept in main file

Appendix B: Preliminary study demographic questionnaire

Questionnaire **Participant No. ….**

Please tell us about yourself. The following information will be treated confidentially.

Q.1 Please check the appropriate box:

Gender

- ❑ Male
- ❑ Female
- ❑ Prefer not to say
- ❑ Other Gender Identity

Your age

- ❑ 60-70
- ❑ 71-80
- ❑ 81-90
- ❑ 91-100
- ❑ Over 100

Q.2 Please indicate your town/city/postcode _____

Q.3 We would like to ask you about your involvement with art, which phrase best applies to you?

- ❑ I am an artist
- ❑ I worked as an artist
- ❑ I was a teacher/educator in arts
- ❑ I am interested in arts
- ❑ Other. Please specify _____

Appendix C: Preliminary study semi-structured interview questions for participants

Background knowledge of sculpture

- Do you like sculpture?
- Have you ever made a sculpture? If yes, give details of material used and process.
- What kind of materials do you think are used for making of sculpture?
- Do you know the name of any sculptor? If yes, then mention name.

After Looking at sculptures

- What do you think about when you look at this sculpture?
- What does it remind you of?
- Is this a realistic or abstract sculpture?
- What materials do you think the artist used to make the sculpture?
- What are the main forms or shapes in this sculpture?
- How is looking at sculpture different from looking at two-dimensional art, like paintings?
- If you could touch the sculpture, what do you think it would feel like?
- Do you think it is heavy or light?

After touching the sculptures

- How does the sculpture feel?
- What does it remind you of?
- What materials are used to make the sculpture?
- Is it additive or subtractive? How can you tell?
- What was the first area you touched? Why?
- What do you see? What else do you see or notice about this sculpture?

Overview

- Which sculpture do you like?
  - ❑ Traditional
  - ❑ Digital
- Now that you know the sculptures are produced using computer based technology, what differences do you find between digital and traditional sculpture after touching? Is there any similarity?
- Have you ever seen any sculpture created using computers?
- How would you describe digital sculpture?
- Which method of making sculpture would you prefer? And why?
- What is the best thing about making sculpture using traditional methods?
- What is the best thing about Digital Sculpture?

Appendix D: Main study consent form for participants

CONSENT FORM

University of Kent

Title of project: Perception of physical and digital sculpture: Exploring the creativity of people with dementia through co-creation

Name of investigator: SUMITA CHAUHAN

Participant Identification Number for this project: Participant #

Please initial box

1. I confirm that I understand the purpose of the study. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐
3. I am aware that my responses will be used as data and could be used for publication. Data gathered in this study will be confidential and anonymous regarding my personal identity. ☐
4. I agree to take part in the above research project which will be video recorded. ☐

Name of participant	Date	Signature
Lead researcher	Date	Signature

Copies:

When completed: 1 for participant; 1 for researcher site file; 1 (original) to be kept in main file

Appendix E: Main study demographic questionnaire for participants

Questionnaire **Participant No. ….**

Please tell us about yourself. The following information will be treated confidentially.
Please tick the appropriate box:

1. Gender
❑ Male
❑ Female
❑ Prefer not to say
❑ Other gender identity

2. Your age
❑ 60-70
❑ 71-80
❑ 81-90
❑ 91-100
❑ Over 100

3. Please indicate your town/city/postcode _____

4. We would like to ask you about your interest in arts. Which of the following describes you? Tick all that apply.

❑ I am an artist
❑ I worked as an artist
❑ I was a teacher/educator in arts
❑ I am interested in arts
❑ Other. Please specify _____

5. Have you made sculpture before?
❑ Yes
❑ No

If yes, please mention what kind of sculpture you made and what material you used
_____

6. Please tell us what emotion you are feeling now, before the session?

_____

7. Please tell us what emotion you are feeling now, after the session?

_____

Appendix F: Main study questionnaire for sessions on sculpture

Questionnaire **Participant No. ….**

About the session (visit to gallery and handling sculptures)

1. How would you describe 'sculpture'?
2. Which sculpture did you like best? Please give reasons.
3. What was the best thing about today's session?
4. Indicate one or two main things you learned today.
5. Any other comments:

Questionnaire **Participant No. ….**

About the session (visit to gallery and handling relief sculptures)

1. How would you describe relief sculpture?
2. Which displayed sculpture did you like best? Please give reasons.
3. What was the best thing about today's session?
4. Indicate one or two main things you learned today.
5. Any other comments:

Making relief sculpture in clay

6. Have you used clay before to create anything? If yes, please mention for what purpose you used clay.
7. What did you try to create with clay in this session?
8. Why did you choose this shape?
9. What did you like about the activity?
10. What will be your preference to make sculpture?
    - ❑ Use your hands
    - ❑ Use some kind of tool

    Tick appropriate box and give reasons:
11. What was the best thing about today's session?
12. Indicate one or two main things you learned today.
13. Any other comments:

Questionnaire **Participant No. ….**

Making free-standing sculpture using papier-mâché

14. Have you used papier-mâché before to create anything? If yes, please mention for what purpose you used papier-mâché.

15. What did you try to create with papier-mâché in this session?

16. Why did you choose this shape?

17. What did you like about the activity?

18. What will be your preference to make sculpture?
    - ❑ Use your hands
    - ❑ Use some kind of tool

    Tick appropriate box and give reasons:

19. What was the best thing about today's session?

20. Indicate one or two main things you learned today.

21. Any other comments:

Questionnaire **Participant No. ….**

About the session (introduction of 3Doodler pen)

1. What was the best thing about today's session?

2. Indicate one or two main things you learned today.

3. Any other comments:

Making sculpture with 3Doodler

4. Did you have any previous experience of seeing any three dimensional form made by using 3Doodler? If yes, tell us about your experience.

5. What did you try to create in this session?

6. Why did you choose this shape?

7. What did you like about the activity?

8. What is your opinion of this technique?

Questionnaire **Participant No. ….**

About Virtual sculpture on Tablet

1. What did you do in today's session?

2. What did you create on the tablet? Why did you create this form?

3. Mention two or three things that you liked about making digital sculpture.

4. Did you like working with the tools on the screen of the tablet? Give reasons.

5. What is your opinion on using computer based technology to create sculptures?

6. Any other comments:

Questionnaire **Participant No. ….**

About Digital sculpture

1. What did you do in today's session?

2. Indicate one or two main things you learned today.

3. Any other comments:

Developing ideas for digital sculpture

4. What is the main idea behind your creation?

5. Why do you want to make this sculpture?

6. What did you finally create in this session?

7. What did you like about the activity?

8. What difference do you find in making this kind of digital sculpture compared to making sculpture using traditional medium such as clay or papier-mâché?

9. Which method do you prefer - traditional or digital? Please give reasons.

10. What did you like about today's activity?

Questionnaire **Participant No. ….**

About the session (last session- preparation for exhibition)

1. What did you do in today's session?

2. What was the best thing about today's session?

3. Which sculptures have you prepared for the exhibition? Write the titles and the medium.

4. Any other comments:

Appendix G: Main study questionnaire for volunteers

Questionnaire **Volunteer No. ….**

Please tell us about yourself. The following information will be treated confidentially.

Please tick the appropriate box:

1. Gender

- ❑ Male
- ❑ Female
- ❑ Prefer not to say
- ❑ Other gender identity

2. Your age

- ❑ 50-60
- ❑ 61-70
- ❑ 71-80
- ❑ 81-90
- ❑ 91-100
- ❑ Over 100

3. Please indicate your town/city/postcode _____

1. We would like to ask you about your interest in arts. Which of the following describes you? Tick all that apply.

- ❑ I am an artist
- ❑ I worked as an artist
- ❑ I was a teacher/educator in arts
- ❑ I am interested in arts
- ❑ Other. Please specify _____

4. Have you made sculpture before?

- ❑ Yes
- ❑ No

If yes, please mention what kind of sculpture you made

_____

About the session (for volunteers)

1. Participant's name with whom you were working today:

2. What do you know about the background of the participant?

3. Please tell us about any interesting facts, events or memories shared by the participant during the session.

4. What were the three best things the participant liked about the session?

5. Is there anything about today's session that the participant did not like?

6. What was participant's overall experience of the session?

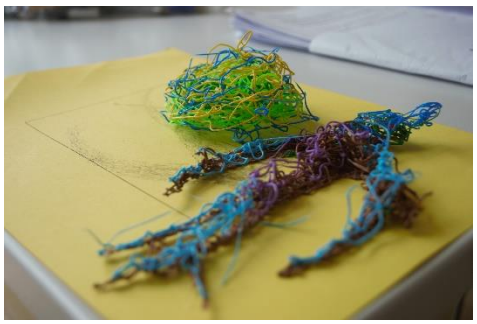
7. Any other comments:

Appendix H: Main study – sculpture-making and exhibition

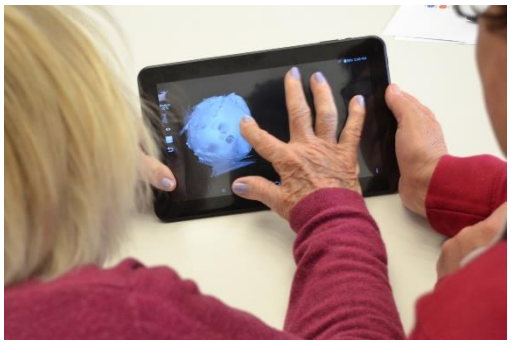

1. Relief sculpture created in clay (left) and display at exhibition (right)

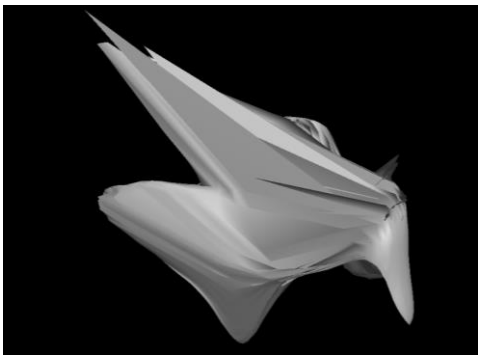

2. Creation of free-standing papiermache sculpture (left) and display at exhibition (right)



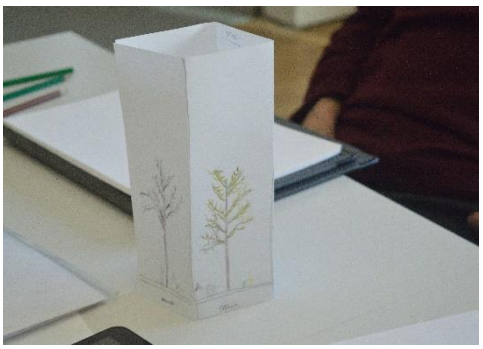



3. Sculptures created using 3Doodler pen (left) and display at exhibition (right)

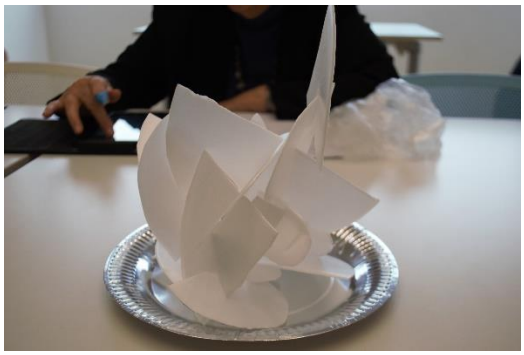




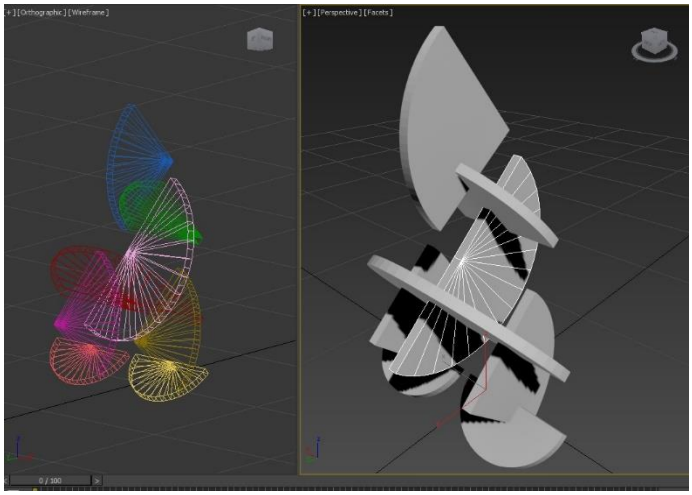
4. Virtual sculptures created on Android Tablet (left) and final creation (right)

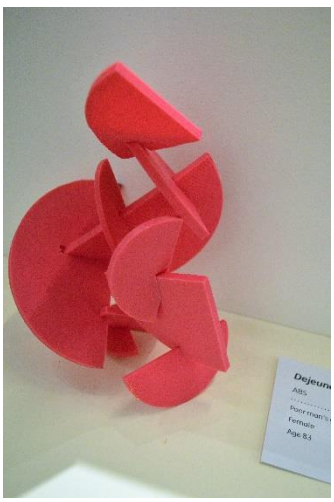


5. Developing ideas for 3D printed sculptures - Drawing (above) and making maquettes (below)



6. 3D model of sculpture (below left) and final 3D printed sculpture (below right)





7. Participants at the exhibition

Appendix I: Questionnaire for public exhibition -1

"SCULPTURAL REVELATIONS"

EXHIBITION BY SUMITA CHAUHAN

The Front Room Gallery

Beaney House of Arts and Knowledge, Canterbury

16th to 31st July 2016

Please tell us about yourself. The following information will be treated confidentially.

Please tick the appropriate box:

1. Gender

- ❑ Male
- ❑ Female
- ❑ Prefer not to say
- ❑ Other gender identity

2. Your age

- ❑ Under 19
- ❑ 19-24
- ❑ 25-45
- ❑ 46-65
- ❑ Over 65

3. Please indicate your town/city/postcode _____

4. Which of the following categories best describes your race/ethnicity?
   a. White- ❑ British ❑ Irish ❑ Any other_____
   b. Mixed- ❑ White & Black Caribbean ❑ White & Black African ❑ White Asian ❑ Any other_____
   c. Asian or Asian British- ❑ Indian ❑ Pakistani ❑ Bangladeshi ❑ Any other_____
   d. Black or Black British- ❑ Caribbean ❑ African ❑ Any other_____
   e. Chinese or other Ethnic Group-❑ Chinese ❑ Any other Ethnic Group_____

5. Do you have any involvement with people with dementia?
   - ❑ Yes
   - ❑ No

   If yes, please specify _____

6. In terms of your involvement with art, which phrase best describes you?
   - ❑ I am an artist/designer by profession
   - ❑ I am a teacher/educator in arts, cultural or media subjects
   - ❑ I work in an arts/design/creative profession
   - ❑ Other. Please specify _____

Exhibition: Sculptural Revelations

1. Please rate your overall experience of participants' works on the scale of 1 as 'very poor' to 5 as 'very good':

Exhibits	1	2	3	4	5
Relief sculptures in clay					
Papier-mâché sculptures					
Sculptures made using 3 Doodler pen					
3D printed sculptures					
Virtual sculpture					

2. Some of the exhibits were created by people with dementia. Has your perception of dementia changed as a result of viewing this exhibition?

   ❑ Yes

   ❑ No

   Please explain _____

   _____

   _____

   _____

   _____

3. Which of the sculptures displayed, traditional or digital, appealed to you most?

   ❑ Traditional

   ❑ Digital

   Please explain_____

   _____

   _____

   _____

   _____

4. Please share with us any other comments you wish to make about the exhibition here.

Appendix J: Questionnaire for public exhibition -2

"INTIMATE CONVERSATIONS"

EXHIBITION BY SUMITA CHAUHAN

31st July to 2nd Aug 2017, Studio3 Gallery, Jarman Building

Please tell us about yourself. The following information will be treated confidentially.

Please tick the appropriate box:

1. Gender

- ❑ Male
- ❑ Female
- ❑ Prefer not to say
- ❑ Other gender identity

2. Your age

- ❑ Under 19
- ❑ 19-24
- ❑ 25-45
- ❑ 46-65
- ❑ Over 65

3. Please indicate your town/city/postcode _____

4. Which of the following categories best describes your race/ethnicity?

   a. White- ❑ British ❑ Irish ❑ Any other_____
   b. Mixed- ❑ White & Black Caribbean ❑ White & Black African ❑ White Asian ❑ Any other_____
   c. Asian or Asian British- ❑ Indian ❑ Pakistani ❑ Bangladeshi ❑ Any other_____
   d. Black or Black British- ❑ Caribbean ❑ African ❑ Any other_____
   e. Chinese or other Ethnic Group-❑ Chinese ❑ Any other Ethnic Group_____

5. Do you have any involvement with people with dementia?
   - ❑ Yes
   - ❑ No

   If yes, please specify _____

6. In terms of your involvement with art, which phrase best describes you?
   - ❑ I am an artist/designer by profession
   - ❑ I am a teacher/educator in arts, cultural or media subjects
   - ❑ I work in an arts/design/creative profession
   - ❑ Other. Please specify _____

7. How would you best describe your level of knowledge in terms of?

   a) Process of making sculpture
      - ❑ Expert knowledge
      - ❑ General knowledge
      - ❑ Little or no knowledge

b) Using digital technology involved in production and presentation of sculpture

- ❑ Expert knowledge
- ❑ General knowledge
- ❑ Little or no knowledge
- ❑

About exhibits

1. How would you rate the variety of sculptures displayed in this exhibition? (Please use the scale from 5 as 'very poor' to 1 as 'very good'):

1----------2----------3----------4----------5

Very good Very poor

2. Please rate your overall experience of the following exhibits

a) Steel sculptures

1----------2----------3----------4----------5

Very good Very poor

b) Fibreglass sculptures

1----------2----------3----------4----------5

Very good Very poor

c) Wood sculptures

1----------2----------3----------4----------5

Very good Very poor

d) Virtual sculptures

1----------2----------3----------4----------5

Very good Very poor

3. Do you think virtual sculptures can be appreciated as a work of art?

1----------2----------3----------4----------5

Strongly agree Strongly disagree

4. Do you think sculptures in virtual space have the same effect as the physical sculptures?

1----------2----------3----------4----------5

Strongly agree Strongly disagree

Give reasons in support of your answer:

Please tell us more about your experience:

1. Describe your first impression of the exhibits in the gallery?

2. The process of making sculpture using traditional methods and digital means varies. What do you think are the differences?

3. What is your opinion of virtual sculpture compared to physical sculpture?

4. If you were to create a sculpture, would you choose the traditional method or prefer digital technology? Please give your reasons, especially after your experience today.

5. What do you think the artist wanted to emphasize in this exhibition?

6. Please share any other comments.