

# **Memory's Image**

By  
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Submitted in fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

Signed statement of originality

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## Abstract

How can the process of memory be represented in visual terms? This project investigated the nature of autobiographical or recollective memory – using photographically derived, computer environments as a visual art form; and is based on some of the wealth of material written about 'memory' or 'memories' and recollection. My aim was to consider this material and use it as a basis for generating work that visually explored the attributes of memory; that evoked the sensation of remembering one's past and, in particular, memories of childhood.

In researching the experience of recollective memory I identified the memory image as pivotal. In brief, I proposed that central to the experience of remembering is the occurrence of a memory image. But when people say, 'I remember,' what are they actually seeing? Is there a visual language of memory that is shared by us all? How might we see memory in our mind's eye? Secondly, what is the nature of this encounter? Could this experience be described as interactive? Would some form of interactivity be a useful addition to the work?

In considering the issue of interactivity as a viable option for the experience of remembering, I was to find firstly, that the process is primarily reactive – whether undertaken voluntarily or involuntarily – a cue provokes and we react. Secondly, the interactive element I had questioned was vastly different to that which I had originally conceived. Instead of a trigger for an image it was an **engagement** with the image. Rather than being the cause of an action, the interactivity comes as we embroider and place it in a context. We weave the fragments together to tell a story.

Interestingly, as I reviewed the visual characteristics of the memory image I found no clear demarcation. It appeared to be highly subjective, with comments ranging from unclear, little or no color and hazy, to highly detailed and vivid. In a similar manner the size and position of the image in space varied. The most important element for me was the notion of these images as small fragments of experience rather than complete episodes in themselves.

In resolving how to evoke an experience of remembering, my work shifted from a screen-based CD-ROM style presentation to video installation.<sup>1</sup> I moved from the use of still photographs to the utilization of full screen digital video as I struggled to represent the memory image in a dynamic rather than static form – as remnants of lived experience rather than frozen instances of time. The thesis exhibition presents the viewer with these fragments. Interaction is present less in the triggering of the memory than in the associations – in the narrative that is constructed and woven from remnants. Although the imagery does, at times, reference glimpses from my own childhood, I have also been concerned to evoke a more generic representation of the memory image.

It is my hope that this project will contribute to an understanding of the visual nature of the memory image and its role in the experience of remembering.

<sup>1</sup> I feel the work is separated from the more general field of video installation, e.g., Pipilotti Rist or Mariko Mori, in that it does not engulf, surround or immerse. I see it more as a vehicle for contemplation.

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# Contents

<b>Part One: Introduction to the Project</b>	3
Background	3
<b>Part Two: Autobiographical Memory</b>	19
Introduction	19
What is Autobiographical Memory?	20
What are the Processes Involved?	22
Organization of Autobiographical Memory	24
Schemas, Summarizations and Generic Memories	25
Forgetting	26
Memory Retrieval	27
Construction	28
Involuntary Memory	30
Is Recollective Memory Interactive?	35
In Conclusion	36
<b>Part Three: The Memory Image</b>	38
Introduction	38
Point of View	39
Field and Observer Memories	39
Illumination	40
Flashbulb Memories	40
Non Vivid Images	41
Definition	42
Focus	42
Lighting	44
Edges	44
Memory Imagery and Vision	45
Size and Distance of Imagery	47
Time	48
Fragmentation	49
In Conclusion	50

<b>Part Four: Fragments in the Narrative</b>	52
Introduction	52
The Still Image: Memory Image?	53
Interactivity and Memory	57
Strategies of Engagement	66
ScrUTiny in the Great Round (1995)	66
Gary Hill, Tall Ships (1992)	69
Bill Viola, The Passing (1991)	73
In Conclusion	77
 <b>Part Five: How the Project Was Pursued</b>	 81
Introduction	81
The First Phase	81
The Second Phase	90
The Third Phase	99
Hall Walk	102
Room	105
Anna's House	108
Bell Jar	112
 <b>Part Six: Conclusion</b>	 114
 <b>Appendices</b>	 
1. Bibliography	116
2. CV	121
3. List of Illustrations	124
4. Extract from Journal. Results of Compression Tests (July)	130
5. Directions for Director Movie Projectors	145



## PART ONE

### INTRODUCTION TO THE PROJECT

I had no tangible memories of a childhood. A few glimmers – my mother died when I was two and a half, I remember the confusion and fear. I vaguely recall scenes from my father's remarriage perhaps a year and a half later. I have been described as a person without a past. Until recently I possessed none of the usual memorabilia that accompanies a life – no photographs, no happy-snaps, no family myths. My life, it seems, began with my first year of high school. At age twelve a light is turned on. Memory functions.<sup>2</sup>

In retrospect it was this experience that started me on my current endeavor. The frustration of not being able to remember large parts of my childhood (except in confused tangles), and my attempts to fuse some sort of a sense of family history, resulted in a desire to know more about the workings of recollection.<sup>3</sup>

This research project explores the nature of autobiographical or recollective memory. How can the process of memory be represented in visual terms? By generating work that engages with the visual attributes of the memory image I have tried to evoke the sensation of remembering one's past. In researching the experience of autobiographical memory I identified the memory image as pivotal. But when people say, 'I remember,' what are they actually seeing? Is there a visual language of memory that is shared by us all? How might we see memory in our mind's eye? Secondly, what is the nature of this encounter? Could this experience be described as interactive? Would some form of interactivity be a useful addition to the work?

My interest in the memory image developed slowly. It evolved out of the unspoken rather than the spoken – what was hinted at but not said. As I questioned people about their recollections of childhood I realized I was being told small stories. They were about places, events, actions or people, some with quite involved contexts and narrative – others less so. Although imagery was implied no one told me what his or her memories actually

<sup>2</sup> Unpublished catalogue for my exhibition, *Safe House*, at aGOG, Canberra, 1995.

<sup>3</sup> Interestingly as the work progressed more of my own memories did surface and through my research I discovered that childhood amnesia is quite a common occurrence.

looked like. I examined my own recollections. Often what came to mind first was a vague personal time-line put together from information supplied by other people. It was material at second hand and made the pictures that I carried in my mind all the more poignant and precious. I rather naively assumed that the appearance of these images implied an interaction and that this occurred at the level of triggering a memory image. I was to find the procedure a lot more subtle and complex.

In Part One of this exegesis I give a general introduction to the background behind the project and look at previous work. This is followed, in Part Two, by a discussion of my reading in areas relating to the study of memory. In this section I look at some of the theories describing the process of remembering and recollection and consider the experiential aspect of this. Part Three is devoted to research on the visual characteristics of the memory image. In Part Four I discuss my own intentions in relation to the fields of still photography, new media and video installation. I acknowledge in particular the influences of Gary Hill, Bill Viola and ScrUTiny and associates, although I feel my work is distinct in its concentration on evoking the experience of the recollective memory image. Part Five takes into consideration the development of my ideas and practice and finally, in Part Six I form my conclusions.

## ***Background***

Looking back at my still photographic work completed prior to this project, I can see many connections. My interest in the techniques of layering, blending and collage have developed from an early use of conventional photomontage, to layering objects on glass, to a more recent use of seamless digital manipulation. Similarly, in earlier work, the process of collecting imagery in order to create discreet photographic environments is comparable to the method I use now of assembling 'collages' of digital video clips that comprise a piece. My attempts to immerse the spectator in the experience of the work have evolved from still photographic techniques for surrounding the viewer, such as large-scale and sequencing.

*Untitled 1986/7* was a series of five large-scale black and white photographs depicting fantasized street views. Each image was 183 x 305cm. The size was important, as I wanted people to feel the possibility of walking into the:



Fig.1. Ruth Frost, *Untitled 1986/7*, silver gelatin photograph, 183x305cm.

depicted scenes. I gathered together specifically photographed images, assembling them and drawing into the final collage with oil-sticks and other media. The results were re-photographed so that I could have a seamless, smooth, photographic surface. I had decided to experiment with the use of collage for two reasons. Firstly, although based on an actual experience, these images were imaginary. I felt that collage gave me a license for imagination, not possible in the single print. Secondly, the idea of the so-called believable or truthful photographic image as a construct was important. What I was trying to do in quite a literal way was to draw a parallel between the construction of the photograph and our own fabrication of reality/truth. Both to an extent are contrived and distorted. Underlying much of my work at the time was the relationship that the photograph has with illusion and reality. The fact that they were photographs, even though collaged and drawn into, created a tension. It was important that the work had a direct anchoring in reality, so that it became, in effect, not a total fantasy created solely from imagination but involved a tension between the real and unreal, fiction and fact.

*Untitled 1988/89* took this theme further. It consisted of a series of thirteen large-scale black-and-white photographic portraits. The prints were 213 x 91.5cm, making the figurative images life-size and adding a mirror-like quality to the experience of viewing them. The work was based on a concept of the human subject as a fluid, changing entity – a being itself constructed from dream, fantasy and myth. It dealt with the notion of this subject as image – an identity trapped and alienated within its own



Fig.2. *Ruth Frost, Untitled 1988/89, silver gelatin photograph,  
213 x 91.5cm.*

construction. This time the layering was done with wet tissue paper and chemicals. The tissue was placed onto the photographic paper and the chemicals splashed across it as I exposed the print, partially disintegrating the figure. Once more I made mockups from the ensuing forms and drew into them before re-photographing.

*Light and Lunatic Foliage* (1991) and *Syllables of Fear and Tenderness* (1993) were both inspired by magic realist fiction and poetry and by the writings of Luce Irigaray. In each series of work I was trying to make environments that gave visual form to what I perceived as this more tactile, sensual, 'female' sensibility. Once again the images were constructed, but the process had become important only as a means to an end.



*Light and Lunatic Foliage* consisted of a series of hand-colored black-and-white images; each 146 x 96cm. I still used the technique of collage and drawing, however I supplemented this by placing objects and plants onto layers of glass and re-photographing the collage through these.



Fig.3. *Ruth Frost, Light and Lunatic Foliage, 1991, hand-colored silver gelatin photograph, 146 x 96cm.*

I used the same technique in *Syllables of Fear and Tenderness*. These were hand-colored Liquid-Light images, each 57 x 49cm.<sup>4</sup> The work, although not entirely successful, was a turning point for me. It marked a shift, away from more abstract concerns and themes, to recognition of the importance of the personal in my work.



Fig.4. Ruth Frost, *Syllables of Fear and Tenderness*, 1993, hand-colored, liquid-light photographs, 57 x 49cm.

My last body of work prior to commencing this PhD was my first attempt to employ the image in a less traditional way and dealt directly with issues of my own childhood memories. In 1994 I started using the computer to compose my images. At the time it felt like a logical step. I had been collaging and constructing with the camera. The computer (or more specifically the program PhotoShop) was recommended as a way to make the process easier. Of course this was not the case, as I was merely presented

<sup>4</sup> Liquid Light is a liquid photographic emulsion that can be painted onto various surfaces. An image can then be exposed and developed as for a normal black-and-white print.



with a new set of problems. PhotoShop however, did give me a tool for layering and blending imagery in ways that had previously not been possible.



Fig.5. Ruth Frost, Untitled, from the series *Childhood Memories – 95 Megabytes*, 1994/95, computer manipulated photographs on polished nickel silver, 12.6x11.9cm.

*Childhood Memories – 95 Megabytes* (1994/95) was the result of these experiments. The title was drawn from the concept of computer memory. At the time I had 95 megabytes worth of imagery. The work was an attempt to visually reconstruct a personal history for myself using scavenged family snapshots. I was trying to take possession of my childhood – personalize it – re-inhabit it – reinvent it. The imagery was loosely based on Spanish/Mexican ex-voto images because of their naivete and connotations of miracles and intervention. I combined photographs of house interiors with the one picture I possessed of myself as a child, as well as images of plants and insects. At times I placed objects directly onto the scanner. I manipulated, blended and ‘cooked’ on the computer. The resulting colored, highly charged imaginary images were transferred onto polished nickel silver plates. They were quite small (12.6 x 11.9cm) and tactile and, with their burnished metal surface, vaguely reminiscent of early daguerreotypes. I sat them on clear Perspex shelves. I was intrigued by the

potential clash between the technology used and the domesticated palpable imagery I sought.



Fig.6. Ruth Frost, *Untitled*, from the series *Safe House*, 1995, computer manipulated photographs on polished nickel silver, 12.6x11.9cm.

*Childhood Memories* became incorporated into a larger body of work called *Safe House* (1995). I continued to use the technique of blending images I had photographed with family snapshots, and transferring them onto the nickel silver plates. By this stage I had found more childhood photographs to use and there was less obvious fantasy.



Fig.7. *Installation view of images from Safe House.*



This then was the stage my work had reached before I embarked on my current undertaking. At the time I had a strong desire to do more with the imagery. I felt it needed sound and movement. I was becoming concerned with enhancing the encounter with the work itself. I wanted to engage the viewer in a more encompassing manner. My use of the word memory started to mean the recollection of past events and experiences.

... [W]e carry in our minds the remains of distant experiences that tie us to the past in a special way. Places that have long ceased to exist and people who have disappeared from our lives continue to survive in our recollections, sometimes as ghostlike phantoms we can barely fathom and sometimes as crystal-clear portraits with all the vibrancy of the here and now.<sup>5</sup>

My interest shifted towards the experience of remembering. How might this be evoked, what was involved?

The phenomenal experience of memory is an ill-defined area. One person who has systematically included sensory information in his research is William Brewer. He claims that it is visual imagery that is regularly experienced with remembering; thoughts, emotions and auditory imagery are also encountered, but much less frequently.<sup>6</sup> Although I do invoke sound in my work I feel that individual thoughts, actions and emotions are too introspective to be adequately dealt with. Similarly, the sensations of taste, smell or touch, although recognized as sometimes occurring during recollection, cannot be sufficiently invoked. It is visual imagery or the mental picture that has been identified as the dominant sensation during recollection and this is where I have concentrated my efforts.

Another area that is currently the subject of a great deal of research is the veracity of autobiographical memory. This is a valid area of interest but has little to do with my investigation of the experience of remembering and, consequently, I have barely touched on the debates surrounding this issue. Donald Spence highlights my feeling on the matter when he concedes that

<sup>5</sup> Daniel L. Schacter, *Searching for Memory: The Brain, the Mind and the Past*, New York: Basic Books, 1996, p. 15.

<sup>6</sup> William F. Brewer, "Memory for Randomly Sampled Autobiographical Events." in *Remembering Reconsidered: Ecological and Traditional Approaches to the Study of Memory*, Ulric Neisser and Eugene Winograd (eds.), Cambridge, England: Cambridge University Press, 1988, p. 67.

the truth of memories may not be the same as the truth of the world. They can be both true and false. 'True with respect to its inner content, a faithful report of a moment of time, and false with respect to a certain slice of the outside world.'<sup>7</sup>

To begin my current research I felt that the following questions needed to be addressed. Firstly, what did I mean by the term autobiographical memory? Secondly, what are the processes involved in remembering? Thirdly, what are the visual characteristics of the memory image? How is it recalled? And lastly, could that experience be described as interactive? I have attempted to answer these questions in the following chapters.

<sup>7</sup> Donald P. Spence, "Passive Remembering," in *Remembering Reconsidered: Ecological and Traditional Approaches to the Study of Memory*, Ulric Neisser and Eugene Winograd (eds.), p. 316.

## **PART TWO**

### **AUTOBIOGRAPHICAL OR RECOLLECTIVE MEMORY**

#### ***Introduction***

In this chapter I discuss some of the many theories that abound in the area of memory research. I do not pretend to be an expert but rather have drawn together various arguments to try and elucidate answers to four of the questions raised in the introduction. These were: what did I mean by the term autobiographical memory; what are the processes involved in remembering; how are memories recalled; and lastly, could that experience be described as interactive?

In brief, I further define autobiographical memory to include the term recollective memory, described as a reliving of an earlier phenomenal experience. I inquire into the actualities of how and why events are remembered. In the section on recall I investigate voluntary and involuntary retrospection. The former involves a strategy of deliberate searching while the latter is typified by a memory that suddenly appears, as if out of nowhere. It seems to be generally agreed that the retrieval of memories involves a cue that prompts or provokes. In the case of voluntary memory these can be quite deliberate and specific; with involuntary memory, however, the process is far more vague. Prompted by our encounters with the environment in general the specific cues are hard or generally impossible to pin down or ascertain. Both types of recall may be involved but I would argue that involuntary recollective memories are a phenomenon experienced frequently by most people; and, that the experience of remembering is primarily reactive; whether undertaken voluntarily or involuntarily – a cue provokes and we react.

## ***What is Autobiographical Memory***

In the case of autobiographical memory that material consists of events that we have personally experienced – or, to put it another way, of our personal experiences of events.<sup>8</sup>

To gain a better understanding of what I was dealing with I needed to gain a rough working knowledge of the characteristics of autobiographical memory. In fact it was only as I started to negotiate the terms that I realized that my use of the word ‘memory’ had a specific name (i.e. autobiographical memory) and that not all remembering is necessarily autobiographical. Consider, for example, the type of memories that might be drawn on to learn new skills. Procedural memory allows us to acquire these. An implicit memory reveals itself without conscious knowledge that one is remembering anything at all. Semantic memory contains our general knowledge.<sup>9</sup> Semantic memories are ‘the abstracted words, concepts, and rules stored in our long term memory whose context of acquisition was long ago forgotten.’<sup>10</sup> Endel Tulving coined this term when he differentiated between semantic and episodic memory; the latter one preserves the experiential aspect of an event. An episodic memory is about a specific event that occurred at a particular time and place. Autobiographical memories are generally perceived as episodic (with some reservations).<sup>11</sup>

What then is autobiographical memory? Autobiographical memories are about our selves, about our particular experiences of events. Martin Conway outlines their characteristics as having a strong relationship to the self, they

<sup>8</sup> Ulric Neisser, “Nested Structure in Autobiographical Memory,” in *Autobiographical Memory*, David C Rubin (ed.), Cambridge, Cambridgeshire: Cambridge University Press, 1986, p. 71.

<sup>9</sup> See Schacter, *Searching for Memory*, p. 17, pp. 134-135 and pp. 161-162 for a general description of these terms.

<sup>10</sup> Gordon H. Bower, “A Brief History of Memory Research,” in *The Oxford Handbook of Memory*, Endel Tulving and Fergus Craik (eds.), Oxford: Oxford University Press, 2000, p. 22.

<sup>11</sup> For example William Brewer states that this definition is too broad, since episodic is also used to describe the laboratory testing of memory. See Brewer, “What is Autobiographical Memory,” in *Autobiographical Memory*, David C Rubin (ed.), p. 33. Martin Conway also argues against the term. He proposes that autobiographical memories contain both semantic and episodic knowledge. See Martin A. Conway, “Autobiographical Memory,” in *Memory*, Elizabeth Ligon Bjork and Robert A Bjork (eds.), San Diego: Academic Press, 1996, p. 166. I think the argument here is about the organization of memory rather than the processes involved. Tulving’s emphasis is on semantic and episodic memory as two separate systems but he does not deny that the act of remembering involves the use of both. See Endel Tulving, *Elements of Episodic Memory*, Oxford, Oxfordshire: Clarendon Press, 1983, pp. 66-68.

contain multiple types of knowledge (sensory-perceptual details and a more abstract, factual knowledge) and he stresses that these are personal interpretations rather than veridical records.<sup>12</sup> William Brewer gives the most succinct description. In previous works, he categorized autobiographical memory into four basic types.<sup>13</sup> (1) The 'personal memory' (others would call this episodic), or the recollection of a specific 'incident from one's past'. (2) In addition to the personal memory an incident can also be preserved as an 'autobiographical fact' or 'non-image representation'. (3) Generic personal memories, which results from exposure to a set of repeated events. These can also include imagery but not necessarily of a specific experience. (4) A 'self-schema', which he describes as generic, 'non-imaginal' knowledge about one's self.

Since then Brewer has further refined and focused his thinking. He now uses the term recollective memory (as opposed to personal) to describe the remembrance of a particular episode from a person's past, and sees this as a subclass of the larger set of autobiographical memories. Recollective memory 'typically appears to be a "reliving" of the individual's phenomenal experience during that earlier moment.'<sup>14</sup> It can contain information about behavior, location, people, objects, thoughts and emotions. This is mostly expressed as a mental image although at times other types of imagery (for example, auditory imagery) can accompany it. There is a strong belief in the veracity of the image generated and, that the incident was personally experienced.<sup>15</sup> Because of its connection with individual remembered experience and imagery, this is also where I have focused my efforts. This was, in fact, what I had imagined when I so casually used the term 'memory'.

<sup>12</sup> Conway, "Autobiographical Memory," in *Memory*, Bjork and Bjork (eds.), pp. 166-169.

<sup>13</sup> Brewer, "Memory for Randomly Sampled Autobiographical Events," in *Remembering Reconsidered*, Neisser and Winograd (eds.), pp. 22-23. See also, Brewer, "What is Autobiographical Memory," in *Autobiographical Memory*, David C Rubin (ed.), pp. 34-35.

<sup>14</sup> Brewer, "What is Recollective Memory?" in *Remembering Our Past: Studies in Autobiographical Memory*, David C. Rubin (ed.), Cambridge, New York, N.Y., U.S.A.: Cambridge University Press, 1995, p. 60.

<sup>15</sup> *Ibid.*, pp. 60-61.

## ***What are the Processes Involved***

Most memory theorists embrace the view that we store a variety of attributes about an event, including its meaning within a context, its sensory qualities, the environment in which the event occurred, and our thoughts and emotions at the time. The trace lies dormant, along with a vast number of traces for other events.<sup>16</sup>

How does one remember? Memory is typically described as a three-stage process of encoding, storage and retrieval.<sup>17</sup> **Encoding** refers to the initial acquisition or placing of information into memory. The encoding process leaves a residue or memory trace (sometimes called an engram) in the nervous system, which conserves the effects of experience across time. If an event is to be retained in a durable form it must be encoded by associating it in a meaningful way with knowledge that already exists in memory. Daniel Schacter calls this **elaborative encoding** and notes that this is not done with most of our day to day experiences.<sup>18</sup> Conway's discussion of the process stresses the segmentation of ongoing happenings and the importance of self-relevance and personal interpretation in registering an incident. For Conway, experience can only ever be selectively encoded. In fact, if the event cannot be integrated with existing knowledge structures or 'current themes and goals of the self', it may not be captured at all.<sup>19</sup>

**Storage** refers to the maintenance of these memory traces. One of the more influential models of this process surmises memory as a series of mental stores. A very basic description of this involves information from the environment entering the system and flowing through to a limited capacity short-term memory where it hovers briefly. At this stage it can either be completely lost or transferred from short-term to a separate long-term memory (encoding).<sup>20</sup> Autobiographical memory is seen as part of this long-term memory complex.

<sup>16</sup> Carla C. Chandler and Ronald P Fisher, "Retrieval Process and Witness Memory," in *Memory*, Bjork and Bjork (eds.), p. 494.

<sup>17</sup> Henry L Roediger and Melissa J Guynn, "Retrieval Processes," in *Memory*, Bjork and Bjork (eds.), p. 197.

<sup>18</sup> Schacter, *Searching for Memory*, p. 45.

<sup>19</sup> Conway, "Autobiographical Knowledge and Autobiographical Memories," in *Remembering Our Past: Studies in Autobiographical Memory*, David C. Rubin (ed.), pp. 86-87.

<sup>20</sup> I am indebted to Scott C. Brown, and Fergus Craik, "Encoding and Retrieval of Information," in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 93, for this description.

Increasingly, theorists are positing alternative frameworks, although the expressions 'short-term' and 'long-term' are often kept for convenience. Scott Brown and Fergus Craik refer to a levels-of-processing view, which emphasizes the role of perception in memory, particularly in the encoding process. This view proposes that rather than being held in a number of different stores, incoming stimuli are processed to different levels – 'from "shallow" or sensory levels to "deep", or meaningful levels.'<sup>21</sup>

However one might choose to regard these opinions what is agreed, is that the more deeply or elaborately the information is processed, and the more frequently it is rehearsed, the better it will be retained. In a twelve-year study of her own memories Marigold Linton noted that it was features such as emotion, importance, and how often the memory was rehearsed, that ensured its continuing existence.<sup>22</sup>

To accept a level-of-processing view also questions whether short-term and long-term memory are indeed separate systems. To this end James Nairne describes short-term memory as a portion of permanent (or long-term) memory that is currently active.<sup>23</sup> Memory here is seen in neural terms. Our memories as 'patterns of connections among nerve cells,'<sup>24</sup> represented in the brain by complex networks of neurons. Here, everything we perceive is represented as a unique set of activated neurons, which will fade unless it has emotional significance or can be associated with things we already know. These patterns of connection become more deeply embedded with repeated activation. Permanent knowledge is represented by the strength of attachments between the different neurons that participate in encoding an experience.

Most of the knowledge and experiences that accumulate in a lifetime lie dormant, undisturbed, in the human mind. Occupying the immediate 'present', we find only fragments of knowledge –

<sup>21</sup> Ibid., p. 94.

<sup>22</sup> Marigold Linton, "Ways of Searching the Contents of Memory," in *Autobiographical Memory*, David C Rubin (ed.), p. 64.

<sup>23</sup> James S. Nairne, "Short-Term/Working Memory," in *Memory*, Bjork and Bjork (eds.), p. 103. He is not the only one to do so. See Gordon H. Bower, "A Brief History of Memory Research," in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 22.

<sup>24</sup> Dr. Barry Gordon quoted in "Memory" by Geoffrey Cowley and Anne Underwood, *Newsweek*, 15 June 1998, p. 51.

thoughts and images that subjectively appear to be in an active state.<sup>25</sup>

In this model something in the environment (the cue) stimulates the relevant portions of permanent memory and a pattern of activity results – the short-term memory trace. This happens anytime we recall something from memory. This is the process of remembering. These are our memories.

### Organization of Autobiographical Memory

How then is this information bound together and organized in long-term memory? Again, opinions are varied but the concept of an hierarchy seems widely accepted. Conway's representation is of three layers of knowledge; lifetime periods, general events and event-specific knowledge (ESK).<sup>26</sup> Lifetime periods or themes are lengthy segments of life assumed to contain general personal knowledge and usually measured in periods of years (e.g. when I went to Art School). These can be used to generate cues that access associated general events. General events are prolonged records of extended and repeated episodes occurring over weeks and months which, in turn, can be used to access more event-specific knowledge, or individual episodes, including sensory-perceptual details (or imagery). '... [A]cross the three layers of knowledge, hierarchical knowledge structures may be formed such that cues available in a lifetime period index a particular, usually large, set of general events that in turn index other general events and ESK.'<sup>27</sup>

As well as being applied to the structure of autobiographical memory as a whole, individual episodes or events are also seen as being structured in an hierarchical way. Ulric Neisser sees memory traces (he uses the term mental representations) as being 'nested' into one another in the same way that events in real life are nested one within the other. He refers to the higher levels in the hierarchy as context and the lower levels as details and describes our use of memory in directed recall as either moving 'downward from

<sup>25</sup> Nairne, "Short-Term/Working Memory," in *Memory*, Bjork and Bjork (eds.), p.102.

<sup>26</sup> Conway, "Autobiographical Memory," in *Memory*, Bjork and Bjork (eds.), pp. 170–176. See also Stephen J Anderson and Martin A. Conway, "Representations of Autobiographical Memories," in *Cognitive Models of Memory*, Martin A Conway (ed.), Cambridge, Massachusetts: MIT Press, 1997, p. 241.

<sup>27</sup> Conway, "Autobiographical Memory," in *Memory*, Bjork and Bjork (eds.), p. 176.



context or upward from particulars.’<sup>28</sup> Brown and Craik use the term levels.<sup>29</sup> The lower or shallower levels represent the sensory aspects of an event and the higher or deeper levels represent the more derived aspects – the significance, meaning, or context. They hypothesize that stimuli encoded only in terms of their sensory features will not be remembered well, and that those encoded in terms of meaning will be better retained.<sup>30</sup>

## Schemas, Summarizations and Generic Memories

... [T]he notion that memories in general are supported and shaped by schematic structures is now very widely accepted.<sup>31</sup>

‘Schemas capture clusters of organized expectations and represent abstract knowledge about some domain.’<sup>32</sup> They are our mental representations of the general characteristics of things and are posited as playing a major role in our memories of events.<sup>33</sup> As we experience similar events our autobiographical information is reorganized and transformed. This allows us to process large amounts of information by summarizing consistencies and regularities in our experience.<sup>34</sup> It becomes harder to recall the individual episodes. What is recalled is an underlying structure. Neisser calls these generic memories (he also uses the term *repisodic*<sup>35</sup>) and emphasizes that they can persist even after the loss of the separate events that gave rise to them.<sup>36</sup> Sometimes what seems to be the most recent occurrence, or an isolated memory, remains accessible but these memories,

<sup>28</sup> Neisser, “What is Ordinary Memory the Memory of?” in *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 364.

<sup>29</sup> Brown and Craik, “Encoding and Retrieval of Information,” in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 94.

<sup>30</sup> *Ibid.*, p. 95.

<sup>31</sup> Ulric Neisser and Lisa K. Libby, “Remembering Life Experiences,” in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 315.

<sup>32</sup> Bower, “A Brief History of Memory Research,” in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 24.

<sup>33</sup> I am indebted to Neisser for this description. “What is Ordinary Memory the Memory of?” in *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 357.

<sup>34</sup> Lawrence Barsalou provides additional support for this in his discovery that summarization features in autobiographical memory more than specific incidents. See Lawrence Barsalou, “The Content and Organization of Autobiographical Memories,” in *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 203.

<sup>35</sup> Neisser, “Nested Structure in Autobiographical Memory,” in *Autobiographical Memory* David C. Rubin (ed.), p. 79. Also see Neisser, “John Dean’s Memory: A Case Study,” in *Memory Observed: Remembering in Natural Contexts*, Ulric Neisser (ed.), San Francisco: W.H. Freeman, 1982, p. 158.

<sup>36</sup> Neisser, “What is Ordinary Memory the Memory of?” in *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 360.

he claims, can be deceptive 'for although it seems to represent only a single episode, we may actually be using it to stand in for an entire extendure.'<sup>37</sup> This includes the generic images mentioned by Brewer, which result from repeated exposure to similar experiences.<sup>38</sup>

Craig Barclay stresses the importance of schemas in the remembrance of our everyday activities and explains that we interpret and fit our autobiographical recollections to suit.

People do not simply forget the details of everyday events ... Instead, when information is remembered, acquired autobiographical self-knowledge drives the reconstruction of plausible, but often inaccurate, elaborations of previous experiences. Memories for most everyday life events are, therefore, transformed, distorted, or forgotten.<sup>39</sup>

Schemas are likewise used to explain the transference of individual episodes into semantic memory. Linton describes how her personal memories are transformed and abstracted into a more generalized semantic knowledge. 'As similar events are repeated, the specific configurations – the patterns that link familiar elements to form unique episodes – themselves become a well-established potentially confusable part of semantic knowledge.'<sup>40</sup>

## Forgetting

Generic memories and schemas are named as one of the prime reasons that we forget the individual instances of our lives. Neisser cites interference among similar items as being a major cause of everyday forgetting.

<sup>37</sup> Neisser, "Nested Structure in Autobiographical Memory," in *Autobiographical Memory*, David C Rubin (ed.), p. 79. His use of the term extendure has been adopted from Marigold Linton and is an activity or situation in which an individual is repeatedly involved or which happens over a considerable period of time. See his explanation on p. 74.

<sup>38</sup> Brewer, "What is Autobiographical Memory," in *Autobiographical Memory*, David C Rubin (ed.), p. 30.

<sup>39</sup> Craig R. Barclay, "Schematization of Autobiographical Memory," in *Autobiographical Memory*, David C Rubin (ed.), p. 89.

<sup>40</sup> Linton, "Transformations of Memory in Everyday Life," in *Memory Observed*, Ulric Neisser (ed.), p. 81.

'When a number of experiences are very much alike, their common structure tends to become salient even as their individual characteristics are forgotten.'<sup>41</sup> A second reason is that the memory traces or engrams themselves, may have disappeared.<sup>42</sup> The strength of connections between neurons that represent a particular experience might also become weakened if that trace is not maintained and rehearsed over time. Conway notes that it is the indices to ESK which become degraded and lost, it is more unusual to forget the general events of our lives.<sup>43</sup> Initial encoding may be at issue here too – how deep was the elaboration? Or, if we think of the hierarchical structures previously mentioned, an event may be encoded at different levels with the meaning and context more deeply encoded than other more vulnerable sensory aspects. A third reason why we may be totally oblivious to parts of our past is that we simply do not encounter the relevant cues or stimulus capable of triggering them.

## **Memory Retrieval**

Tulving ... emphasized that remembering is a product of information from two sources: encoded information or 'memory traces' and retrieval information.<sup>44</sup>

Whether or not an event can be remembered often depends on the cues that are used to stimulate or search memory. Tulving defines retrieval cues as those especially salient 'aspects of the individual's physical and cognitive environment that initiate and influence the process of retrieval.'<sup>45</sup> He claims that 'all retrieval is always cued'. In real life (as opposed to the laboratory) these cues are perceived or made manifest in our continual interchange with our surroundings.

Encoding and retrieval are intrinsically bound together. Successful retrieval of a memory relies to a large extent on whether information in the retrieval

<sup>41</sup> Neisser, "What is Ordinary Memory the Memory of?" in *Remembering Reconsidered*, Neisser and Winograd (eds.), pp. 360-361. See also Michael C. Anderson and James H. Neely, "Interference and Inhibition in Memory Retrieval," *Memory*, Bjork and Bjork (eds.), pp. 237-302.

<sup>42</sup> Gordon Bower describes a progressive decay or erosion of the synaptic changes in the brain that had encoded the original experience. See Bower, "A Brief History of Memory Research," in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 12.

<sup>43</sup> Conway, "Autobiographical Knowledge and Autobiographical Memories," in *Remembering Our Past*, David C. Rubin (ed.), p. 72.

<sup>44</sup> Roediger and Guynn, "Retrieval Processes," in *Memory*, Bjork and Bjork (eds.), p. 231.

<sup>45</sup> Tulving, *Elements of Episodic Memory*, p. 171.

cue was incorporated into the initial encoding or memory trace. Schacter asserts that the ‘likelihood of later recalling the event depends on the extent to which a retrieval cue reinstates or matches the original encoding,’<sup>46</sup> citing as most important the ability of the cue to restore the subjective perception of that event.<sup>47</sup> This could also include factors such as a person’s mental state at the time of encoding and reinstating the context (i.e. revisiting the scene).<sup>48</sup> Conway’s description of retrieval in autobiographical memory is one of a complicated process of effortful construction across layers of knowledge and often characterized by wrong information, false starts and blockages.<sup>49</sup> He describes this process as dynamic; as taking time to evolve, and as resulting in ‘complex mental representations’. He does acknowledge, however, as does Tulving, that at times this process may take place unconsciously, in the background, allowing the emergence of seemingly spontaneous memories.<sup>50</sup>

## Construction

Remembering is not the re-excitation of innumerable fixed, lifeless and fragmentary traces. It is an imaginative reconstruction, or construction, built out of the relation of our attitude towards a whole active mass of organized past reactions or experience, and to a little outstanding detail which commonly appears in image or in language form.<sup>51</sup>

There are a number of issues involved with remembering as an act of construction. Firstly, the idea of memory as a construct is seen in opposition to memory as a copy of reality – where a personal memory is seen as a veridical copy of the original event.<sup>52</sup> As Neisser has observed, a memory of an incident is dependent on what was perceived, rather than on

<sup>46</sup> Schacter, *Searching for Memory*, p. 60.

<sup>47</sup> Ibid., p. 61.

<sup>48</sup> See Brown, and Craik, “Encoding and Retrieval of Information,” in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), pp. 100-101 for a description.

<sup>49</sup> Anderson and Conway, “Representations of Autobiographical Memories,” in *Cognitive Models of Memory*, Conway (ed.), p.219.

<sup>50</sup> Anderson and Conway, “Representations of Autobiographical Memories,” in *Cognitive Models of Memory*, Conway (ed.), pp. 242-243. Tulving, *Elements of Episodic Memory*, p. 33.

<sup>51</sup> Sir Frederic C. Bartlett, *Remembering*, London: Cambridge University Press, 1932, p. 213.

<sup>52</sup> Robert Buckhout declares this a nineteenth century belief that implies what we see has a direct correlation to the physical world. See Robert Buckhout, “Eyewitness Testimony,” in *Memory Observed*, Neisser (ed.), p. 116.

what actually happened.<sup>53</sup> In addition, the encoding process itself involves associating information with what is already stored in memory. '... [O]ur memories are built on our elaboration's ...'<sup>54</sup>

Secondly, there is the notion of the retrieval of a memory as being an act of construction. How do we remember? Does a cue somehow activate a quiescent engram in the mind – is this all a memory is? Neisser, in equating the hierarchical storage structure of memory to the nested structure of reality, says that it is our knowledge of this structure in reality that makes construction in remembering almost inevitable. Even though most of the information at every level is probably forgotten we are still confident of their existence.

Recall is almost always constructive. No matter how well you remember an event, the information available will not specify all the context that once gave it meaning or all the molecular actions that were once nested inside it. If you care to try, you can build on what remains ...<sup>55</sup>

Tulving also emphasizes remembering as a constructive activity 'that uses components from episodic memory (the engram) as well as semantic memory (the cue) ...'<sup>56</sup> In other words the retrieval cue combines with the engram to create something else.<sup>57</sup>

Conway differentiates between autobiographical knowledge and autobiographical memories asserting that 'autobiographical memories are not stored in long-term memory, but rather are constructed on the basis of knowledge sampled from the autobiographical knowledge base.'<sup>58</sup> Here, our memories are not discreet whole elements stored in long-term memory

<sup>53</sup> Neisser, "Nested Structure in Autobiographical Memory," in *Autobiographical Memory*, David C. Rubin (ed.), p. 74. Conway further reinforces this, reflecting that it is the self that directs attention and determines which event features are strongly encoded. See Conway, "Autobiographical Memory," in *Memory*, Bjork and Bjork (eds.), p. 168.

<sup>54</sup> Schacter, *Searching for Memory*, p. 56.

<sup>55</sup> Neisser, "Nested Structure in Autobiographical Memory," in *Autobiographical Memory*, David C. Rubin (ed.), p. 78.

<sup>56</sup> Tulving, *Elements of Episodic Memory*, p. 180.

<sup>57</sup> See Elizabeth F. Loftus and John C. Palmer, "Reconstruction of Automobile Destruction," in *Memory Observed*, Neisser (ed.).

<sup>58</sup> Conway, "Autobiographical Knowledge and Autobiographical Memories," in *Remembering Our Past*, David C. Rubin (ed.), p. 76.

but are forged during the process of retrieval. They are 'constructed rather than retrieved.'<sup>59</sup>

In these accounts sensory details and images as well as meaning, context, narrative etc. are linked to form a personal memory **during the process of remembering** rather than being inherently in existence.

## Involuntary Memory

The past is hidden somewhere outside the realm, beyond the reach of intellect, in some material object (in the sensation which that material object will give us) which we do not suspect. And as for that object, it depends on chance whether we come upon it or not before we ourselves must die.<sup>60</sup>

Many of the ideas that have been thus far considered draw heavily upon voluntary recall, where one is either trying to remember a specific incident or engaged in a deliberate search of memory. Proust likened the act of voluntary memory to looking at a picture book or at snapshots. To him, this was 'intellectual' memory and a mediocre substitute, containing nothing of the experience and sentiment of a past moment.<sup>61</sup> Interestingly Ernest Schachtel, in formulating his hypothesis for childhood amnesia, echoes this sentiment. He refers to adult memory as conventional and clichéd. 'Conventionalization is a particular form of what one might call schematization of memory. Voluntary memory recalls largely schemata of experience rather than experience.'<sup>62</sup> In other words both Proust and Schachtel identify the product of voluntary recall as totally lacking any of the qualities of the original experience – a ghostly, stifled reflection at best.

I should stress here that by involuntary memory I mean a recollective memory brought about by involuntary recall; for Proust, these involuntary memories completely recreated a former experience with imagery, thoughts, and emotions. It was as if, for an instant, he lived simultaneously in the past and the present. 'The marine dining room of Balbec ... had sought to shatter the solidity of the Guermantes mansion, to force open its doors, and

<sup>59</sup> Ibid., p. 85.

<sup>60</sup> Marcel Proust, *Remembrance of Things Past*, Vol. 1, trans. C.K. Scott Moncrieff, New York: Random House, 1924-1925, p. 34.

<sup>61</sup> Marcel Proust, *Remembrance of Things Past*, Vol. 2, trans. C.K. Scott Moncrieff and Andreas Mayor, New York: Random House, 1927-1930, p. 1015.

<sup>62</sup> Ernest G. Schachtel, *Metamorphosis*, New York: Basic Books, 1959, p. 294.

for an instant had made the sofas around me sway and tremble.<sup>63</sup> Esther Salaman's portrayal of involuntary memory is similar. 'There is another kind of memory of experience, which comes unexpectedly, suddenly, and brings back a past moment accompanied by strong emotions, so that a 'then' becomes a 'now'.<sup>64</sup> And Donald Spence implies a comparable shift in reality when he queries whether involuntary memories may be unknowingly substituted for lived experience.<sup>65</sup>

I should stress here that these accounts do vary in intensity. Proust, for example, seems to border on hallucination, while Salaman (who incidentally accuses him of exaggeration) claims no difference in vividness between her voluntary and involuntary memories. The contrast for her was in the accompanying emotions and the suddenness or the surprise element involved.<sup>66</sup> At the very least one could say that involuntary memories are associated with mental imagery, and that they can involve additional impressions.

How do these memories emanate? An altered state of consciousness seems to be a prerequisite for their emergence.<sup>67</sup> Salaman refers to this condition.<sup>68</sup> But Spence implicates Proust's encounters if we take into account his definition of this shift in consciousness as a lapse of attention; perhaps one could say that the mind is arrested.<sup>69</sup> As well as a shift in consciousness, there is a catalyst. Occasionally this is an obvious cue. For example, to add another fragment in response to a conscious memory, as happened with Salaman.<sup>70</sup> Or they may be triggered by such diverse items as the 'sound of a voice', 'a patch of sunlight' or a 'buzzing fly'.<sup>71</sup> Many of Proust's memories were triggered by a physical sensation. The taste of a Madeleine cake; the feel of paving stones under his feet; the touch of a

<sup>63</sup> Proust, *Remembrance of Things Past*, Vol. 2, trans. Moncrieff and Mayor, p. 1003.

<sup>64</sup> Esther Salaman, *A Collection of Moments: A Study of Involuntary Moments*, Harlow: Longman, 1970, p. 11.

<sup>65</sup> Spence, "Passive Remembering," in *Remembering Reconsidered*, Neisser and Winograd (eds.). Although his discussion centers on autobiographies I feel it is relevant.

<sup>66</sup> Salaman, *A Collection of Moments*, p. 22.

<sup>67</sup> Spence, "Passive Remembering," in *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 321.

<sup>68</sup> Salaman, *A Collection of Moments*, p. 28.

<sup>69</sup> Spence, "Passive Remembering," in *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 315.

<sup>70</sup> Salaman, *A Collection of Moments*, p. 24.

<sup>71</sup> *Ibid.*, p. 17.

napkin. Each provoked a 'sensation common to past and present,' which resulted in a flood of memory.<sup>72</sup>

Alan Richardson notes that most of us have encountered the sudden appearance of a long forgotten past event in a strongly imagined form and he names the contact senses (smell or touch) rather than distance senses like sight or hearing as the stimulus.<sup>73</sup> I think, (as does Schachtel), that the emphasis should simply be on the senses. Taste, touch, smell, sight, the hearing of a sound or even the occurrence of a particular body posture.<sup>74</sup> Gaston Bachelard assumes something similar of the body when he claims memories as being physically inscribed in us. 'The feel of the tiniest latch has remained in our hands,'<sup>75</sup> as though 'we ourselves were dissolved in this fluid of the past.'<sup>76</sup> And Proust too, reminds us of the body's retrospection, of the way it preserves pieces of the past. '... [A]nd my body, the side upon which I was lying, loyally preserving from the past an impression which my mind should never have forgotten brought back before my eyes the glimmering flame of the night-light in its bowl of Bohemian glass.'<sup>77</sup> These confusing gusts of involuntary memory seem somehow more mysterious than our strategic searches. They seem to appear out of nowhere; they pop into our mind. With memories that are cued by the senses or diverse contact with the environment, it may be hard at times to determine the source, and this is even more true for memories triggered by a particular body posture or touch. Perhaps the answer is simply that one stumbles by chance on a cue, however vague it may be, that reinstates an aspect of a coded engram enabling the memory to be retrieved. Perhaps physical sensations, or the senses, are more likely to trigger appropriate sensory fragments in memory.

In Walter Benjamin's discussion of Proust, he alludes to an observation by Freud concerning memory, 'memory fragments are often most powerful and most enduring when the incident which left them behind was one that never entered consciousness.'<sup>78</sup> In other words only that which is not

<sup>72</sup> Proust, *Remembrance of Things Past*, Vol. 2, trans. Moncrieff and Mayor, p. 1003.

<sup>73</sup> Alan Richardson, *Mental Imagery*, London: Routledge and Kegan Paul, 1969, p. 138.

<sup>74</sup> Schachtel, *Metamorphosis*, pp. 311-312 and p. 315.

<sup>75</sup> Gaston Bachelard, *The Poetics of Space*, trans. Maria Jolas, Boston: Beacon Press, 1994, (1958), p. 15.

<sup>76</sup> Ibid., p. 57.

<sup>77</sup> Proust, *Remembrance of Things Past*, Vol. 1, trans. C.K. Scott Moncrieff, p. 5.

<sup>78</sup> Walter Benjamin, *Illuminations*, edited and with an introduction by Hannah Arendt, trans. Harry Zohn, New York: Schocken Books, 1969, c1968, p. 160.



consciously experienced can become part of what has been defined as involuntary memory. Is this what Proust refers to when he declares that it is what the mind has forgotten that is recalled to us most vividly?<sup>79</sup> Schachtel also cites Freud when he uses the phrase 'memory traces of the unconscious' and describes their apparent immunity to voluntary recall.<sup>80</sup>

It is as though they touched directly the unconscious memory trace, the record left behind by a total situation out of the past, whereas voluntary recall tries to approach and construct this indirectly, coached and deflected by all those ideas, wishes, and needs which tell the present person how the past could, should or might have been.<sup>81</sup>

As previously stated he attributes the recovery of these traces to the repetition of a past sensation. Whatever the cues one acknowledges, what is being posited here is that the process of involuntary recall somehow taps directly into remnants of an actual event as opposed to a more constructed and stylized schemata of that experience.

Proust has elevated involuntary memory to almost legendary proportions, but is there really a difference between voluntary and involuntary recollections – apart from the fact that the former is intended and the latter is not? Dorthe Berntsen's study of the two forms found that involuntary memories referred more to specific events and were less rehearsed than those elicited voluntarily.<sup>82</sup> They occurred more frequently when attention was 'diffuse' and were often triggered by quite particular external cues deemed central to the context of the remembered event (Proust's 'sensation common to past and present').<sup>83</sup> What Berntsen is saying is that the two ways of recollecting – voluntary or involuntary – will engender quite different memories. Voluntary recollection usually involves written or verbal language as cues and these are often too indistinct or general to access specific fragments. Conversely, the many 'accidental, situational cues' encountered in everyday life are often too exclusive to elicit a summarized event. She concluded that involuntary retrieval is far more

<sup>79</sup> Proust, *Remembrance of Things Past*, Vol. 1, trans. C.K. Scott Moncrieff, p. 488.

<sup>80</sup> Schachtel, *Metamorphosis*, p. 309.

<sup>81</sup> Ibid., p. 312.

<sup>82</sup> Dorthe Berntsen, "Voluntary and Involuntary Access to Autobiographical Memory," *Memory*, 1998, 6 (2), p. 128.

<sup>83</sup> Ibid., p. 135.

likely to access individual incidents (and by implication sensory fragments or imagery) than voluntary retrieval.<sup>84</sup>

I likewise find it conceivable that voluntary recall may find it easier to access 'top down' hierarchies and may completely miss surviving fragmentary details (if they are still there), especially when we think in terms of a cue needing to provoke the subjective perception of an event. The more sensually oriented cues, however, should stimulate sensory information in a more direct manner. Much has also been made of an altered state of consciousness but Berntsen points out that diffuse rather than focused attention simply allows more details to enter consciousness rather than it being important in its own right.<sup>85</sup> What distinguishes one from the other is the product of the recall. If I am reminiscing or trying to remember a particular event, what usually comes to mind are facts, an internal monologue or story, or sometimes an image, usually a familiar one. Involuntary memories however, would seem to evoke imagery far more frequently and, according to Berntsen, 'such memories appear to be an everyday phenomenon for most people.'<sup>86</sup>

I do not wish to make a case for one theory as against the other; but rather to acknowledge that involuntary memories are a common occurrence. I would also stress that although voluntary retrieval may appear at first to be a more laborious task, in essence the mechanisms are similar. Something still springs to mind, although this may be repeated (Conway's cyclic retrieval) until the search is concluded. And lastly, the product of the recall may differ.

To clarify the experiences of voluntary and involuntary memory Schacter uses the term associative retrieval to describe an automatic triggering process that uses the hippocampus and medial temporal lobe. Voluntary recall is seen as a strategic retrieval. It uses areas of the prefrontal cortex to generate hints and cues to interrogate the medial temporal system.

<sup>84</sup> Ibid., pp. 135-137.

<sup>85</sup> Ibid., p. 136.

<sup>86</sup> Dorthe Berntsen, "Involuntary Autobiographical Memories," *Applied Cognitive Psychology*, Vol. 10, 1996, p. 435.

If the frontal system generates a cue that has a match in memory, the medial temporal system will automatically 'spit out' an engram that combines with the cue. Without the aid of the frontal system the medial temporal system must simply 'wait' for an appropriate cue to come along and make contact with a stored engram.<sup>87</sup>

Here the difference between involuntary and voluntary recall is merely that the former involves direct triggering (that is usually cued by the physical environment) and the latter involves internally generated cues.

### ***Is Recollective Memory Interactive?***

Long-term memory continuously interacts with the fleeting slice of time that we experience as the present.<sup>88</sup>

Can the experience of recollective memory be described as interactive? One would certainly think so, especially if we take Tulving's description of recollection as being stimulated by our interaction with the environment. This is certainly where I first concentrated my efforts. But to interact is to act reciprocally: it implies a mutual exchange.

To return to active or voluntary remembering; even if one accedes to the constructionist theories of memory previously referred to, I think that the experience is of immediacy and is more akin to that of involuntary memory. It appears to be tacitly agreed that these processes mostly happen in the background without our awareness.<sup>89</sup> Something triggers the mind and a response occurs even if this process is repeated many times. I would argue that even when undertaken voluntarily the experience of remembering is mostly passive. The stimulus or cue, whether internal or external, provokes a reaction. The hippocampus spits out a mental picture or response; we are in the presence of a memory image or more.

<sup>87</sup> Schacter, *Searching for Memory*, p 68.

<sup>88</sup> Roger Brown and Richard J. Herrnstein, "Icons and Images," in *Imagery*, Ned Block (ed.), Cambridge, Massachusetts: MIT Press, 1981, p. 44.

<sup>89</sup> Anderson and Conway, "Representations of Autobiographical Memories," in *Cognitive Models of Memory*, Martin A Conway (ed.), pp. 242-243. Tulving, *Elements of Episodic Memory*, p. 33. Conway, "Autobiographical Knowledge and Autobiographical Memories," in *Remembering Our Past*, David C. Rubin (ed.), pp. 81-82. Brewer, "What is Recollective Memory?" in *Remembering Our Past*, David C. Rubin (ed.), p. 24.

I would like to make a distinction between the experience of recollective memory, which involves the initial recall of imagery or other details; and reminiscing, which involves communication and is verbal. Whether to others or ourselves our memories are usually told – a detail comes to mind and we verbally elaborate. Barclay describes how we construct a personal history out of fragments of information and how this history is revised and changed over time. We build a sense of self from our autobiographical memories, evaluating experiences and constructing stories.<sup>90</sup> This gives meaning to our lives. ‘... [R]eminiscing is a fundamental process for establishing our sense of self and our relationships with others ...’<sup>91</sup> We organize, we rearrange and, most importantly, we learn appropriate narrative forms so that our anecdotes can be understood.

Rather than being a simple response to a cue or stimulus, the interaction comes as we try to make sense of the fragments; as we bind and weave our interpretations; as we create our story.

### ***In Conclusion***

One possibility is that recollective experience is most powerfully felt when a memory extensively features ESK, and when ESK does not feature in the access of autobiographical knowledge then remembering is characterised by a feeling of knowing rather than an experience of remembering (Conway, 1992).<sup>92</sup>

So far I had ascertained what autobiographical (or for my purposes recollective) memory was and the various ways in which it functioned. But these procedures, although important and answering in part my original questions, still left one major factor unaccounted for. It is the memory image that is nominated as paramount to the experience of recollective memory.<sup>93</sup> Without it we merely have an autobiographical fact – or someone else’s story – if that. Conway differentiates between a ‘feeling of knowing’ and the actual experience of remembering. It is highly specific

<sup>90</sup> Barclay, “Autobiographical Remembering: Narrative Constraints on Objectified Selves,” in *Remembering Our Past*, David C. Rubin (ed.), pp. 94-123.

<sup>91</sup> Robyn Fivush, Catherine Haden, and Elaine Reese, “Remembering, Recounting, and Reminiscing: The Development of Autobiographical Memory in a Social Context,” in *Remembering Our Past*, David C. Rubin (ed.), p. 342.

<sup>92</sup> Conway, “Autobiographical knowledge and Autobiographical Memories” in *Remembering Our Past*, David C. Rubin (ed.), p. 89.

<sup>93</sup> Tulving, *Elements of Episodic Memory*, p. 185. Brewer, “What is Recollective Memory?” in *Remembering Our Past*, David C. Rubin (ed.), p. 60.

knowledge (or to use Conway's term ESK) in the form of imagery and sensory details that defines a memory as uniquely belonging to oneself; as having been personally experienced. It is the memory image that enables us to believe our memories. In the following chapter I investigate the visual characteristics of this image.

## PART THREE

### THE MEMORY IMAGE

These questions presuppose assent to some sort of a proposition regarding the 'mind's eye' and the 'images' which it sees ... This points to some initial fallacy ... It is only by a figure of speech that I can describe my recollection of a scene as a 'mental image' which I can 'see' with my 'minds eye' ... I do not see it ...<sup>94</sup>

#### *Introduction*

It is the memory image that enables us to believe our memories, but what does it look like? There is research available on mental imagery but very little description. Its orientation is more towards whether people do experience imagery during recollection; what parts of the brain are utilized; how visual imagery can aid in learning; how well it can be retained; or the impact of images on other cognitive tasks? Even in autobiography, memories are often described in terms of what happened as opposed to what they looked like. A lot of my exploration therefore has involved inference, gleaned the odd sentence, with extensive searching of my own memory.

Francis Galton did conduct a study published in 1880, which I will refer to frequently.<sup>95</sup> His questionnaire was designed to tease out the different degrees of vividness inherent in mental imagery and, it addressed such questions as: Illumination – was the image dim or clear? Definition – how well defined were the objects? And colors – were they distinct or natural? William Brewer has also consistently documented the sensory aspects of the memory image. In comparison to visual perception, he describes recollective memory images as being 'dim', 'unclear' (although they may contain some detail), 'sketchy' and 'unsteady', with a point of view from either the original perspective or from an observer's position.<sup>96</sup>

<sup>94</sup> As quoted by Francis Galton, "Statistics of Mental Imagery," *Mind* 5, July, 1880, p. 302.

<sup>95</sup> Galton, "Statistics of Mental Imagery," pp. 301-318.

<sup>96</sup> Brewer, "What is Recollective Memory?" in *Remembering Our Past*, David C. Rubin (ed.), pp. 60-61.

## ***Point of View***

### **Field and Observer Memories**

One phenomenal attribute of autobiographical memory that has been noted since Freud is the perspective or point of view from which a past event is experienced. More recently, in a series of studies Georgia Nigro and Ulric Neisser, after outlining two types of memory image, which they called field and observer images, made the following observations.<sup>97</sup> The main characteristic of the **observer** perspective was that one observed one's self in the memory. They were evoked by situations that involved a high degree of emotional self-awareness and also seemed to be associated with older memories. **Field** memories were ones where the perspective was roughly what you would have seen during the original event. They were generally associated with more recent experiences but also appeared when emphasis was placed on the recall of emotions and feelings. Moreover, the perspective was not necessarily determined at the time of the original event. Although most memories may have a preferred outlook, Nigro and Neisser's subjects reported being able to switch between the two.

I examined some of my earliest recollections and found that I too had field and observer memories although at this point I am unable to change the perspective. In what I think is my oldest memory all I see is dim faces peering closely at me and what I now assume to be candle flames. It is definitely from the field perspective. Another incident is of wandering out of a front gate and becoming lost. This takes the form of a series of episodes. The first is a field image facing down a street; the second is an observer's glimpse of myself asking some other children if they knew where my mother was. The final scene contains an observer's view of myself being carried down the street and switches to a field image of my mother and grandmother rushing towards me. In a third memory I see myself crouched on the ground examining a cut on my knee, it is from the observer position.

<sup>97</sup> Georgia Nigro and Ulric Neisser, "Point of View in Personal Memories," *Cognitive Psychology* 15, 1983.

Nigro and Neisser also reported that participants in these experiments rated their memories for recent events as significantly more vivid.<sup>98</sup>

## ***Illumination***

### **Flashbulb Memories**

Vividness is a characteristic that has been noted in some studies. But what does this mean? Are the colors intense; is everything in focus, are the details sharp and clear? Roger Brown and James Kulik originally used the term flashbulb to describe a class of memory that was clear, highly detailed, persistent and seemed to stand out from the usual autobiographical accounts (they based their studies on the assassinations of famous figures). 'It has a primary, 'live' quality that is almost perceptual. Indeed, it is very like a photograph that indiscriminately preserves the scene in which each of us found himself when the flashbulb was fired.'<sup>99</sup>

For David Rubin and Mark Kozin vivid meant clear and life-like.<sup>100</sup> In a study designed to broaden and test the prerequisites for flashbulb memories, their subjects were asked to recall the most clear, detailed, flashbulb-like memories of their lives. They were to describe and rate three of these memories on a scale from 1 to 7 – the number 1, meant no image at all and 7, meant as brilliant as normal vision. Out of a total of 174, 58% had a rating of 6 or 7. Rubin and Kozin found that vivid memories were of personal importance, and were accompanied by higher levels of consequentiality, surprise, emotional change, and rehearsal, than those classed as non-vivid, surmising that this would explain the motivation for their existence (i.e. they were frequently rehearsed). Although Rubin and Kozin felt they had broadened the term to include memories of personal rather than national importance, what was agreed was that they stood out because of a distinct, lifelike quality that had been retained, whatever their age.

<sup>98</sup> Nigro and Neisser, "Point of View in Personal Memories," p. 476.

<sup>99</sup> Roger Brown and James Kulik, "Flashbulb Memories," *Cognition* 5, 1977, p. 74.

<sup>100</sup> David C. Rubin and Marc Kozin, "Vivid Memories," *Cognition* 16, 1984.



The debate surrounding Brown and Kulik's 'Now Print' explanation for this phenomenon does not concern me.<sup>101</sup> I am interested in the fact that intense 'lifelike' images are accepted as being part of the experience of recollective memory.

### Non Vivid Images

I should point out that, despite my having some memory images that contain sharply focused areas and vivid colors, many do not. I am not alone here – it seems that memories of childhood events are often characterized as being less vivid and having less overall detail.<sup>102</sup> Richardson's observation that memories are 'typically more like a hazy etching, often incomplete and usually unstable, of brief duration ...'<sup>103</sup> holds true for me. Hazy, ghostlike, dim, incomplete, would all fit well as descriptions. Perhaps dim would be better suited to earlier imagery, in some of these the murkiness is so dense it is almost physical. One of Galton's participants likened his image to that seen through a darkened pane of glass.<sup>104</sup>

Color too is often reported as faded. Occasionally the more pronounced items retained their intensity, maintaining distinctiveness because of saturation as well as clarity. Another observation worth highlighting is that the memory image can appear unsteady, it has sometimes been described as flickering.<sup>105</sup>

<sup>101</sup> See Neisser, "Snapshots or Benchmarks", in *Memory Observed*, Ulric Neisser (ed.). Also see his comments on episodic memories, "Nested Structure in Autobiographical Memory" in *Autobiographical Memory*, David C. Rubin (ed.), p. 79, and Brewer's comments, "What is Autobiographical Memory," in *Autobiographical Memory*, David C. Rubin (ed.), p. 41 for an overview.

<sup>102</sup> Marcia K. Johnson, Mary Ann Foley, Aurora G. Suengas, Carol L. Raye, "Phenomenal Characteristics of Memories for Perceived and Imagined Autobiographical Events," *Journal of Experimental Psychology: General*, Vol. 117, No.4, 1988, p. 373.

<sup>103</sup> Richardson, *Mental Imagery*, p. 43.

<sup>104</sup> Galton, "Statistics of Mental Imagery," p. 312.

<sup>105</sup> Brewer, "What is Recollective Memory?" in *Remembering Our Past*, David C. Rubin (ed.), p. 24. See also Brown and Herrnstein, "Icons and Images," in *Imagery*, Ned Block (ed.), p. 47.

## **Definition**

### **Focus**

My picture of a memory image was beginning to emerge. It had multiple points of view and moments of great clarity, but I contended that, even in vivid detailed images, there were areas less sharply defined. I had thought that perhaps it was just the quality of my earlier, childhood recollections that suffered. It was recent memories that were often associated with vivid imagery, as was emotion. I tried to fix a picture of my son as last seen, each time I left him in childcare or at home. Even here the semblance was incomplete. The images were from the 'field' perspective. I could see his face, clothing, and body posture, but the positions and features of other children in the room were blurred or nonexistent, as was the room itself. The colors became mere faded smears. If I concentrated I could pull different parts of the room into focus, but did this come from my simply having seen it so many times, or was it part of the original scene that I had tried to memorize? In another instance I am leaving my son at home and I look through closed French doors as I wave goodbye. I vividly see his orange striped tiger pajamas and his face as he looks at me behind the panes of glass. He is diffused with light – it is still dark, so the kitchen lights are on – but it is the blurring of the background that creates the effect. Even though I know the room so well I cannot see it properly. It is diffuse. Again, I can pull parts into focus but this probably comes from familiarity rather than the specific moment.

When I first heard the term flashbulb I was disturbed by the reference to photographs, as none of my own memories were so distinct. Brown and Kulik clarified the issue when they referred to their use of 'flashbulb' as suggesting surprise and brevity, as illuminating a scene. They were quick to point out that whereas a photograph would preserve everything indiscriminately a flashbulb memory does not.<sup>106</sup> In other words all the parts of the image were not necessarily visible and individual details were

<sup>106</sup> Brown and Kulik, "Flashbulb Memories," pp. 74-75.

often missing.<sup>107</sup> The items that were preserved however were sharp and intense, as was the surrounding narrative and context.<sup>108</sup>

To return to Galton's study, his 'middle of the range' participants observed a similar phenomenon to my own. Only parts of the recalled scene were distinct although they sometimes found that if attention was paid to a particular object it became more definite.

The image is pretty clear, but not so clear as the actual thing. I cannot take in the whole table at once, and I cannot see more than three plates at once, and when I try to see both ends of the table I cannot see anything of the middle. I can see nothing beyond the table but the table itself seems to stand out from the distance beyond.<sup>109</sup>

Interestingly I found related comparisons in Edward Casey's accounts of imagined imagery. Although he is not referring to memory per se, it is still mental imagery and to my mind warrants some attention. Casey describes his imagined objects as not fully formed or tangible. 'Although I recognized the imagined dolphins as dolphins, their faces were at first almost entirely indefinite; only later, when I had made an explicit effort to focus on these faces, did they take on any determinateness of form.'<sup>110</sup> Subsequently, when giving further descriptions of these images he reinforces this point commenting that it is possible for an image to contain different degrees of clarity.<sup>111</sup> In Esther Salaman's reminiscences, one of my first instances of finding descriptions of how a memory looked as opposed to a story of actions and characters, this combination of diffusion and clarity is also evident. 'Her face I see only vaguely, but Father's is wonderfully clear ...'<sup>112</sup> And again, 'I see my bed by the wall, and a person

<sup>107</sup> Conway gives an example of a flashbulb memory that contains both a 'clear image' and 'hazy impressions', see Anderson and Conway, "Representations of Autobiographical Memories," in *Cognitive Models of Memory*, Conway (ed.), p. 218.

<sup>108</sup> This also served to clarify one further point. Conway, an advocate of autobiographical memories as constructed products of retrieval, had privileged flashbulb memories, as being 'whole,' as not constructed. I think his usage of the term referred to the binding together of image, meaning, narrative and context through rehearsal, and in the initial encoding, rather than the image per se, see Conway, "Autobiographical Memory," in *Memory*, Bjork and Bjork (eds.), p. 189.

<sup>109</sup> Galton, "Statistics of Mental Imagery," p. 311.

<sup>110</sup> Edward S. Casey, *Imagining A Phenomenological Study*, Bloomington: Indiana University Press, 1976, p. 37.

<sup>111</sup> Ibid., p. 55.

<sup>112</sup> Salaman, *A Collection of Moments*, p. 26.

whom I know bending over me, but not the rest of the room, not even the foot of the bed.’<sup>113</sup>

## Lighting

This last quote serves to illustrate a further discovery. A memory may be both lucid and vague. The quality is irregular. So too is the volume of light. Although darkness or dimness can equally be equated with a lack of focal clarity it can also be taken literally. Salaman’s portrayal is of stage lighting. The main area is lit up ‘as if a shaft of light illuminates the center of the stage while all around there is complete darkness.’<sup>114</sup> What becomes apparent is an area of light – the focal element – and areas of darkness. The frequent reference to depths; to memories being buried or excavated; brought into the light from darkness; also serves to illustrate this point. Proust imagined ‘something that has been embedded like an anchor at a great depth.’<sup>115</sup> For Salaman it was like working on an archaeological site.<sup>116</sup> Linton and Andreas Huyssen both use the nomenclature of surfacing.<sup>117</sup>

## Edges

Although the level of light may not always be as extreme as the scenes described above, at the very least the edges of the image appear to fall into obscurity. They certainly do not have the defining rectangular frame of video footage or a photograph.

My own memories lack the harshness of light associated with floodlights or vivid flashes. More recent ones have a diffusion of light already described. Other than a fade to black, I am simply not aware of the edges in any literal sense. Rather they seem to float in a void with a slightly ragged quality. The ‘edge,’ if I can call it that, blurs outward with my attention and simply fades away. Casey puts this quite succinctly in his depiction of the margins

<sup>113</sup> Ibid., p. 32.

<sup>114</sup> Ibid., pp. 31-32.

<sup>115</sup> Proust, *Remembrance of Things Past*, Vol. 1, trans. C.K. Scott Moncrieff, p. 35.

<sup>116</sup> Salaman, *A Collection of Moments*, p. 21.

<sup>117</sup> Linton, “Ways of Searching the Contents of Memory,” in *Autobiographical Memory*, David C Rubin (ed.), p. 53. Andreas Huyssen, *Twilight Memories: Marking Time in a Culture of Amnesia*, New York: Routledge, 1995, p. 123.



of an imaginary image. 'The presentation seems to trail off into an almost wholly inchoate nebulosity, an undifferentiated limbo.'<sup>118</sup> My older memories – those from childhood – do literally bleed into darkness and their quality is quite distinct. Salaman claimed that, 'every early memory was an island without a background.'<sup>119</sup> Mine are more like small vignettes, which float – although that implies an evenness to the fading, which is not always present. One such image is of sitting at our piano, knowing that I was late for school. This is from the observer perspective and the viewpoint is quite high. All I can see is myself from the back and the piano; everything else, like my mood, is gray to black.

### ***Memory Imagery and Vision***

Is there an explanation for some of the visual characteristics discussed thus far? Unless we are of the school of thought that assumes that all our experiences are lying dormant somewhere in the brain, we must assume that memories do fade over time. The traces decay, become eroded, blurred or overwritten, especially if not frequently rehearsed and used.

However Stephen Kosslyn's explanation 'that visual mental imagery shares mechanisms with visual perception ...'<sup>120</sup> would seem to provide further insight. Martha Farah, who investigated evidence for the involvement of the visual system in mental imagery, and reached similar conclusions, further supports his hypothesis.<sup>121</sup> Kosslyn uses this rationale to support his argument that mental images are 'quasi-pictorial' representations (as opposed to the view that mental imagery is symbolic or non-imagistic representation<sup>122</sup>).

My reason for mentioning the affinity is that when we look at a scene or object we do not initially 'see' a complete and definite image. Our eyes are not miniature cameras capturing an exact replica of what is 'out there'.

<sup>118</sup> Casey, *Imagining A Phenomenological Study*, p. 54.

<sup>119</sup> Salaman, *A Collection of Moments*, p. 33.

<sup>120</sup> Stephen M. Kosslyn, "A Cognitive Neuroscience of Visual Cognition: Further Developments," in *Mental Images in Human Cognition*, Robert H. Logie and Michel Denis (eds.), Amsterdam: North Holland, 1991, p. 351.

<sup>121</sup> Martha J. Farah, "Is Visual Imagery Really Visual? Overlooked Evidence From Neuropsychology," *Psychological Review*, Vol. 95, No. 3, 1988.

<sup>122</sup> For an overview of this debate see Zenon W. Pylyshyn, "The Imagery Debate. Analog Media versus Tacit Knowledge," in *Imagery*, Ned Block (ed.).

Rather, different areas in the visual cortex specialize in capturing different aspects of a 'scene' – for example edges, color, form or motion. These are processed separately and then integrated to form a whole.<sup>123</sup> Kosslyn theorizes the existence of what he calls a visual buffer, which receives input from these low-level processes in perception and plays a major role in the integration procedure, surmising that we only retain fragments of visual information and that the buffer fills in the gaps.<sup>124</sup> He further asserts 'it is possible that a visual mental image is a pattern of activation in the visual buffer that is induced by stored information, as opposed to input from the eyes ...'<sup>125</sup> This suggests that our images are not packaged as single units in long-term memory but are fragmented.<sup>126</sup> Although he is referring to mental imagery rather than memory imagery, we could similarly interpret our memories as composed of stored shreds of perceptual information, which are then 'fitted together' in a visual buffer.

I assume that at times these images may be incomplete or only vaguely filled in. Kosslyn speculates the center of the visual buffer as supporting a high resolution, which decreases towards the periphery. He imagines objects in these mental pictures as transient representations that start a process of decay the moment they are activated, so that 'if too many parts are imagined, the ones activated initially will no longer be available by the time the later ones have been imaged.'<sup>127</sup>

Perception is another way of looking at these issues; it determines the scope and quality of our experiences as well as their reproduction by memory. As Roger Brown and Richard Herrnstein affirm, 'we cannot ever experience the objective stimulus itself, even when it is right there. We experience its transformation by our sensory and perceptual machinery.'<sup>128</sup> The mind is not a passive recorder and our perceptions are not always analogous in

<sup>123</sup> Semir Zeki, "The Visual Image in Mind and Brain," *Scientific American*, September, 1992.

<sup>124</sup> Kosslyn, "A Cognitive Neuroscience of Visual Cognition: Further Developments," in *Mental Images in Human Cognition*, Logie and Denis (eds.), p. 356.

<sup>125</sup> Ibid., p. 354.

<sup>126</sup> See also Stephen M. Kosslyn et al., "On the Demystification of Mental Imagery," and Stephen M. Kosslyn, "The Medium and the Message in Mental Imagery. A Theory," in *Imagery*, Ned Block (ed.).

<sup>127</sup> Kosslyn, "The Medium and the Message in Mental Imagery. A Theory," in *Imagery*, Ned Block (ed.), p. 214.

<sup>128</sup> Brown and Herrnstein, "Icons and Images," in *Imagery*, Ned Block (ed.), p. 46.

relation to the physical world.<sup>129</sup> Furthermore, with most activities, we are not aware of everything at once, rather our consciousness shifts in and out as we concentrate on different aspects. Neisser's portrayal of how his focus shifts with his attention and how 'unattended levels seem to move to the margins of awareness ...' is apt.<sup>130</sup>

Kosslyn additionally asserts that our imagery abilities are restricted by the fact that images require effort to preserve. 'The more perceptual units that are included in an image, the more difficult it is to maintain ...'<sup>131</sup> We are often unable to sustain a complete image, retaining only what is easiest or perhaps, most strongly perceived, especially if the memory is an old one.

### ***Size and Distance of Imagery***

Two other findings by Galton are worth mentioning. Firstly he observed that if a memory closely resembled actual vision in vividness, it would be experienced externally and its distance in space would be similar to that of the real object. 'When a mental scene arises vividly and without effort, the position of the vision is more frequently external, as it is in hallucination.'<sup>132</sup> This immediately brings to mind Proust's 'mémoire involontaire'; those hallucinatory memories that managed to distort reality and transport him into the past. Proust described these visions as fluttering near him or superimposing themselves (the translators use the word grappling) with the actual scene in front of him.<sup>133</sup> Although Salaman makes no mention of precisely where her memory images are located in space, her reference to involuntary memories giving a sensation of living in the past, seems to indicate something similar.<sup>134</sup>

Personally I have not had these extreme experiences. My memories exist in space at a point in front of me but they are very much images – I do not confuse them with the real. I do, however, concur with the observation by one of the participants in Galton's questionnaire: 'The part I look at is

<sup>129</sup> See the first half of the section on Construction, p. 28.

<sup>130</sup> Neisser, "Nested Structure in Autobiographical Memory," in *Autobiographical Memory*, David C Rubin (ed.), p. 75.

<sup>131</sup> Kosslyn, "A Cognitive Neuroscience of Visual Cognition: Further Developments," in *Mental Images in Human Cognition*, Logie and Denis (eds.), p. 353.

<sup>132</sup> Galton, "Statistics of Mental Imagery," p. 316.

<sup>133</sup> Proust, *Remembrance of Things Past*, Vol. 2, trans. Moncrieff and Mayor, p. 1003.

<sup>134</sup> Salaman, *A Collection of Moments*, p. 45.

much smaller than reality, with a haze of black all round it. It is like a small picture.'<sup>135</sup> Galton's second point was that memory images are frequently smaller than the observed reality (sometimes seen at a distance or hovering close by). I have noticed that sometimes I can work on, and enlarge, parts of an image but when they first appear they are often small.

## **Time**

The finest specimens of fossilized duration concretized as a result of long sojourn, are to be found in and through space. The unconscious abides. Memories are motionless, and the more securely they are fixed in space, the sounder they are.<sup>136</sup>

Recollective memories are associated with the particular events and incidents of our lives. But are we always able to precisely place these recollections in time? Brewer suggests mostly not. He allows that some memories may contain information about the time of day (sunlight, darkness) but that unless they are somehow 'time-tagged' we are rarely able to be so precise. Rather we experience them as having occurred at a unique time.<sup>137</sup> I would go further and say that we often associate a date, time, and context with our memories but that the images themselves are timeless. Tulving's description is of 'a slice of experience frozen in time ...'<sup>138</sup>

I would add one further point. It is perceived or experienced time, that is referred to in the memory image, as opposed to chronological time. To give an example, Salaman describes one of her memories as a 'picture in slow motion.'<sup>139</sup> I have also had this experience with the recollection of a car accident I was involved in. In this I seem to see, in painfully exaggerated slow motion, the resulting explosion of glass.

<sup>135</sup> Galton, "Statistics of Mental Imagery," p. 315.

<sup>136</sup> Bachelard, *The Poetics of Space*, p. 9.

<sup>137</sup> Brewer, "Memory for Randomly Sampled Autobiographical Events," in *Remembering Reconsidered*, Neisser and Winograd (eds.), pp. 74-75.

<sup>138</sup> Tulving, *Elements of Episodic Memory*, p. 184.

<sup>139</sup> Salaman, *A Collection of Moments*, p. 24.



## Fragmentation

Events and episodes comprise elements – that is, features or components of the event or episode. These include: who, what, where, and the like. Finally, there are *details* that clothe the elements and events – nuances of color, sound, texture, exact location, and so on. These are often implicit in memories but rarely appear, except fragmentarily, in explicit recall either natural or contrived.<sup>140</sup>

Unstable, fragile and fragment are words frequently used in the portrayal of memory. Salaman records how she ‘sometimes caught an aspect of a street, the hour of the day, a color, a face: unmistakable fragments of Russian memories.’<sup>141</sup> Salaman also uses the term ‘moments’ to depict her images. Occasionally two or more such moments might slot together and join to flesh out a previous image and narrative.<sup>142</sup> She connects a series of ‘still-life pictures’.<sup>143</sup> If we think about circumstances in our life as continually unfolding it is as if, in memory, most of this disintegrates leaving one discrete moment or image that stands in for the occurrence. This may not be a literal still-life image but the duration is usually brief. I am reminded here of my recollection of examining a cut on my knee. I think I jumped from our front verandah but I have no image of a before or an after. Two other examples can serve to illustrate this point. One is the remembrance of my becoming lost (described in the section on field and observer memories). This was an extended incident but is now represented by four quite separate scenes that fluidly dissolve into each other. I have another memory of a tree house I played in as a child. It is a field image of my hand on a branch; light shining through intensely green leaves and a feeling of quiet, followed by an indistinct observer’s view of myself crouched on a branch overhearing a conversation. I’m certain this was a place where I spent a lot of time, yet all I retain are these two fragments that are possibly unconnected.

Tulving’s use of event is opportune here.<sup>144</sup> He identifies an event as something that occurs in a particular situation, always having a beginning

<sup>140</sup> Linton, “Ways of Searching the Contents of Memory,” in *Autobiographical Memory*, David C Rubin (ed.), p. 59.

<sup>141</sup> Salaman, *A Collection of Moments*, p. 15.

<sup>142</sup> For example see her description of how this occurred in *A Collection of Moments*, pp. 24-26.

<sup>143</sup> Spence uses this term in “Passive Remembering,” *Remembering Reconsidered*, Neisser and Winograd (eds.), p. 317.

<sup>144</sup> Tulving, *Elements of Episodic Memory*, pp. 37-38.

and an end in time. We segment our stream of experience into events (using perceptual and cognitive skills) that are nested within each other and ordered temporally.<sup>145</sup> But this temporal order can be easily disrupted with the initial information becoming altered or lost. The problem is compounded if we consider a neural perspective (experience coded in networks of neurons), and amplify this to cover distinct aspects of an experience (e.g. visual image, sound, smell, location, context) stored in quite separate areas. A newly encoded memory may involve thousands of neurons spanning different regions of the brain.<sup>146</sup> Schacter's portrayal of the medial temporal region is eloquent and concise; he sees it as pointing to, and binding together, 'fragments of perceptual experience', that are stored in separate cortical regions.<sup>147</sup> Another example may serve here. I have always retained a powerful memory image of my father's silhouette in a doorway; the light is on behind him and I cannot make out his face: he is telling me of my mother's death (I was two-and-a-half). Yet in a conversation with my aunt she used the exact words in describing an incident that happened a few years later. I have no recollection of this but apparently I was present – have I confused the two?

To further complicate matters, Neisser hypothesizes an event as being experienced on different levels and that each level is remembered independently, leaving behind its own trace in memory.<sup>148</sup> These, as previously discussed, are nested within each other and linked hierarchically but if the links decay and most of the information is forgotten we may be left with isolated pockets of experience – fragments.

### ***In Conclusion***

This concludes my exploration of the memory image. What I discovered was the great diversity of imagery. It was not one thing but many; depending, it seemed, on the subjective perception of the individual;

<sup>145</sup> This is also emphasized by Anderson and Conway, "Representations of Autobiographical Memories," in *Cognitive Models of Memory*, Conway (ed.), p. 237. And in Conway, "Autobiographical knowledge and Autobiographical Memories in *Remembering Our Past*, David C. Rubin (ed.), pp. 86-87.

<sup>146</sup> For a more complete description of this see Bower, "A Brief History of Memory Research," in *The Oxford Handbook of Memory*, Tulving and Craik (eds.), p. 26.

<sup>147</sup> See Schacter, *Searching for Memory*, pp. 86-87.

<sup>148</sup> Neisser, "Nested Structure in Autobiographical Memory," in *Autobiographical Memory* David C. Rubin (ed.), pp. 76-77.

sometimes the image is clear, sharp and vivid, and at other times blurred, dark and barely perceptible. The results seeming to depend on the emotional valiance of the memory; or possibly the frequency of visitation. Even the size of the encountered imagery seems open to individual interpretation. If one were to take Proust at face value for example, the extent and intensity of his apparitions appear to almost disrupt his present circumstances.<sup>149</sup> When Proust's descriptions are placed alongside those of other's, such as Galton, we realize the extent of the variations in the idea of the image as a small discreet entity that gives the appearance of floating in space, or is even projected onto other surfaces.<sup>150</sup> Perhaps the only consistent quality is a lack of definition at the edges and the segmentation of experience into fragmented and often displaced moments.

In the following chapter I investigate some of the possibilities for dealing with the memory image as a visual art form.

<sup>149</sup> Proust, *Remembrance of Things Past*, Vol. 2, trans. Moncrieff and Mayo, p. 1003.

<sup>150</sup> Galton, "Statistics of Mental Imagery," pp. 314-317.

## PART FOUR

### FRAGMENTS IN THE NARRATIVE: RELATED ART PRACTICES<sup>151</sup>

#### *Introduction*

Where does one concentrate an exploration of memory? It is pervasive. In literature, for example, the subject has a time honored tradition and has been dealt with extensively. I found however, that descriptions of memories in the literature tended to focus primarily on what happened – a story – or an overall narration without really telling me the details of what the memory looked like. The context of my work, however, is in the visual appearance of a memory – the image – and the experience of this and therefore I have chosen to reference literary works in other chapters, where appropriate, rather than dealing with the issue as a separate subject here. In addition, although at times influential to my work, literature is not the field in which the work will be considered. For this same reason I have not extended my research into film despite this being another area that has favored the subject. As with literature I have found the overall concern to be with the narrative rather the memory image per se. The visual techniques used are concerned primarily with how to blend the two items, the story and the memory – to merge one into the other and still keep the narrative flowing.

This chapter echoes the development of my own work. It moves from a brief consideration of the still photograph as an image of memory; to the possibility of interactivity to convey the experience of anamnesis; finally concentrating on video and installation, the area where I have positioned my own practice. In my discussion, apart from a general outline on the use of interactivity, I have concentrated on artists whose works deal with notions of memory, rather than attempting a wider review of an entire genre.

<sup>151</sup> The phrase 'fragments in the narrative' is borrowed from Andreas Huyssen, *Twilight Memories: Marking Time in a Culture of Amnesia*, p. 123.

### ***The Still Image: Memory Image?***

My own training and the traditional link between the photograph and the past ensured my continuing fascination with the still image and I first looked here for answers to the enigma of the memory image. Although the process is becoming increasingly usurped by video, the encounter with reconstructions of our childhood through the photograph and the family album is a familiar occurrence. We 'capture' precious moments of our own. (I admit to a shameless imaging of my son.) For this reason the representation of the family snapshot did appear to offer an option as a device for picturing memory.



Fig.8. *Jacky Redgate, Photographer Unknown #5, Chiswick 1953, from the series Photographer Unknown, A Portrait Chronicle of Photographs, England 1953-62 (1984), silver gelatin photograph, 76.2x50.8cm (framed).*

Fig.9. *Jacky Redgate, #20, Adelaide c. 1972, from the series Untitled Day, 2000, C-type photograph, mat, custom-made wooden frames, 610x508x5cm (framed).*

Jacky Redgate's series: *Photographer Unknown, A Portrait Chronicle of Photographs, England 1953-62 (1984)*, was taken from a collection of old negatives in the photographer's possession. Her more recent work, *Untitled Day (2000)* uses a similar device; this time the imagery was acquired from family portraits photographed by her father.



Christian Boltanski's *Photo Album of the Family D., 1939 – 1964* (1971) was based on old photographs borrowed from a friend, and deliberately re-shot and collated.



Fig.10. Christian Boltanski, detail from *Album de photos de la famille D., 1939-1964* (*Photo album of the family D., 1939-1964*), 1971.

But in viewing the works of Redgate and Boltanski, rather than seeing them as individual memories, I became intrigued by the coincidences and similarities of family life. These images capture the rituals of everyday existence. What becomes important is their role in upholding family myth rather than an individual's perception of a moment; what was represented, or evoked, was a collective reality, emphasizing the vulnerability inherent in the archetypal family snapshot. Furthermore, even when we do recall existing photographs as memories I would argue that the image we see in our mind's eye is different from the actual photograph. The photographic keepsake or remnant, although asked all too often to stand in for memory, is a **stimulus** for memory rather than being an image of memory – albeit a powerful one with its sense of a direct trace of lived experience and the real.

A very different response is evoked by Boltanski's *Les Habits de François C.* (1972) which consists of a series of black and white photographs of articles of children's clothing encased in tin frames. Clothing, with its immediate link to the body is a provocative catalyst; the look, the touch,

even the smell of a particular item can conjure up images. Boltanski's crumpled remnants are immensely moving, seemingly still connected to the bodies that inhabited them.

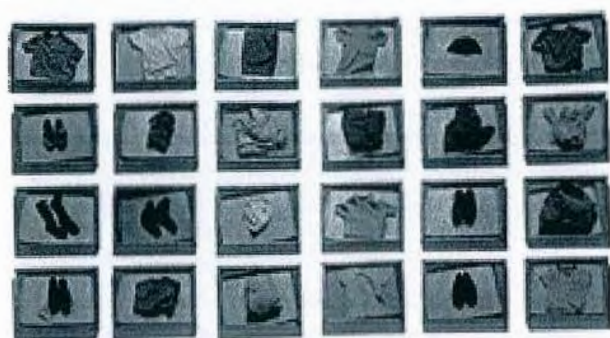


Fig.11. Christian Boltanski, *Les Habits de François C* (*The clothes of François C*), 1972.

In a similar manner Anne Ferran's delicate life-sized photograms of christening gowns, and other articles of clothing, resonate with associations to lost infancy.<sup>152</sup> In both cases, however, the works are powerful for the memories they evoke rather than as actual representations of recollection.



Fig.12. Anne Ferran, *Untitled* (baby's dress), 1998, silver gelatin photogram, 110 x 95cm.

I was surprised to find that although many photographers might be indirectly influenced by memory, there seemed little engagement with the memory image as such. Arne Turyn is one who does confront this subject

<sup>152</sup> *Flock* (2001) is the most recent work that I have seen.

matter. Her series, *Illustrated Memories* (started in 1983), uses color photographs of staged moments to deal explicitly with visual retrospection.



Fig.13. Anne Turyn, *Untitled*, 1983. *From the series Illustrated Memories, chromogenic color print (ektacolor), 32.9 x 48.6cm.*

Turyn herself describes the work as a 'fictional, visual autobiography that depicts a life through illustrated memories.'<sup>153</sup> Throughout the series she uses contrivances such as partial blurring of the image, focusing in on a small tableau, or heavy cropping of the picture, to represent an incident filtered through memory. The cropping also conveys the sense of a partially snatched instant, indicative of the fragment. It is often used as a way of opening up the narrative of a work for the viewer, as is her other ploy of obscuring the identity of her characters, so one relates to the image more as a generic experience.

Another series (1986), illustrated the phenomenon of Flashbulb memories, and was so named.<sup>154</sup> The images are fanciful constructions of the circumstances under which a person might have learnt of an emotionally significant or traumatic occurrence. Headlines of featured news events are paired with details of the surroundings in which that news was received, signaling how the actual news and the visual components of the environment become fused in memory.

Despite Turyn's desire to depict visual memory, I found her images curiously distant and unsatisfying. They had an affected quality that

<sup>153</sup> *Aperture*, No. 130, Winter 1993, p. 43.

<sup>154</sup> For a description of Flashbulb Memories see my section of the same name in Part Three, p. 40.



ran counter to my own experience of remembering; I did not see the memory image as static, frozen instants on a gallery wall. In a strange twist

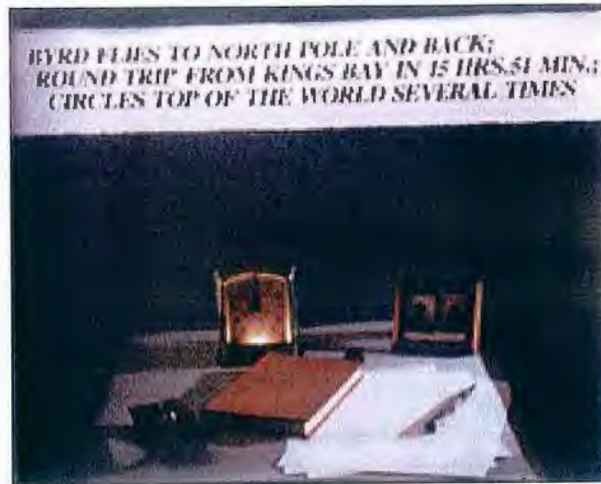


Fig. 14. Anne Turyn, *5/10/1926 (Flashbulb Memories)*, 1986, Ektacolor print, 11x14 inches.

the still photograph also has the power to block memory. Barthes talks of the violence inherent in the photograph, the way it can ‘fill the sight by force ...’<sup>155</sup> Curiously these images, with their highly controlled attempts at describing memory, seemed to do just that. The still images that had seemed most successful to me were works such as Boltanski’s and Ferran’s photographs which quietly evoked memory; but as I was concerned to engage with what I felt was the more fluid nature of the memory image, I turned elsewhere.

### ***Interactivity and Memory***

Because I started this project with an assumption that I would link interactivity with the process of recollection, and because of my own utilization of the computer, interactive art works seemed a likely field of focus.

Ulrike Gabriel’s interactive installation, *Memory* (1999) was made in collaboration with David Gabriel and involved large-scale image projections and sound. If I understand the work correctly it consisted of different

<sup>155</sup> Roland Barthes, *Camera Lucida: Reflections on Photography*, trans. Richard Howard, London: Flamingo, 1984, (Editions du Seuil, 1980), p. 91.

interfaces for text, image and gestural manipulation. Participants, simultaneously connected via a computer link up, could feed in images or



Fig. 15. Ulrike Gabriel, installation view of *Memory*, 1999.

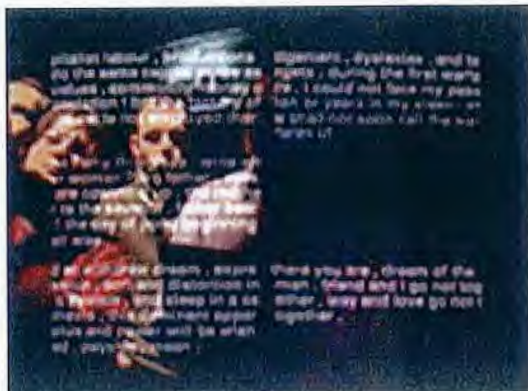


Fig. 16. Ulrike Gabriel, detail from *Memory*, 1999.

text. Their combined contributions, which were additionally influenced by gesture, constantly generated new adaptations of the material and were the basis of the projected 'memory phantoms.'<sup>156</sup> Lisa Cianci uses a much simpler example of this approach in her web-based work *Same Old Dreams*.<sup>157</sup> Here, participants are invited to collaborate by submitting responses to questions and imagery. The information is stored in a database called the 'memorypool' and used in the artwork, thereby allowing the piece to grow and change over time. Although initially captivated by the possibilities of this way of working, I felt that with its network of impersonal associations it seemed more an illustration of the workings of memory (probably semantic), in general, rather than the rich connotations that the recollective image suggested.

In Toni Dove's responsive movie *Artificial Changelings* (1998), viewers use body movement and spatial position as a way of interacting with the

<sup>156</sup> See <http://www.v2.nl/Projects/MemoryArena/>, <http://www.otherspace.de/pages/projects/memarena/> and <http://celeronx2-1.khm.de/~david/> for a better understanding of this project (last visited 21/10/01). I have not personally experienced this work, which inhibits me from referring to it in detail.

<sup>157</sup> See <http://www.mmorphe.com/sameolddreams/> (last visited 16/4/02).



narrative of the story.<sup>158</sup> Four 'zones', indicated by a pool of light, are situated at various points in front of a large rear projection screen. Each of



Fig.17. Toni Dove, detail from *Artificial Changelings*, 1998, interactive laser disk and sound installation.

these areas allows interaction with the movie or the personalities represented on screen. For example, you can access a character's thoughts, have them speak directly to you, or cross into different sections of the story. Body movement within the zones also alters the behavior of the video, so that one can travel forward and backward in the narrative as well as alter the look of the imagery and the soundscape. In this way of working, participants may have quite different experiences of the content and feel of the piece depending on their own responses.

Thecla Schiphorst offered another avenue for thought. Her work attracted me because of its sensuality; its complex interplay between image and viewer and indirect reference to retrospection. *Bodymaps: artifacts of touch* (1996) and *Felt Histories (re: the fact of a doorframe)* (1998), both use projection.<sup>159</sup> In the former an image of the artist's body illuminated a white velvet covering, while the latter involved back projected imagery onto a space suggestive of a doorway. Both surfaces were infused with a bed of

<sup>158</sup> See <http://www.funnygarbage.com/dove/> (last visited 17/4/02). I have not personally experienced this work, which inhibits me from referring to it in detail.

<sup>159</sup> See [http://www.jamas.ac.jp/interaction/i97/artist\\_Schiphorst.html](http://www.jamas.ac.jp/interaction/i97/artist_Schiphorst.html) and <http://www.interaccess.org/touch/schiphor.htm> for an overview of *Bodymaps*. For *Felt Histories* see <http://www.artspeak.bc.ca/exhibits/felthistories/install.htm> and <http://www.usask.ca/kenderdine/1999.html> (last visited 29/10/01). I should add that I have not personally experienced these works.

sensors that measured, amongst other things, proximity, movement, touch and pressure. As one approached and/or touched the image it fluctuated and changed, responding to the presence and caress of the viewer. It was the sensuality and closeness of the encounter that attracted me to this artist. With her emphasis on touch and intimacy, she challenged the more traditional distance between observer and artwork and, like Dove, implicated the viewers through their actions and presence. Her use of technology, although intricate, was not intimidating, instead inviting communion.



Fig. 18. *Thecla Schiphorst, detail from Bodymaps: artifacts of touch, 1996, computer interactive sound and video installation.*

However, as I delved further into the intricacies of recollection, I was increasingly starting to question my original suppositions. I wondered if my interest in new media was based on the purely superficial assumption that these artists appeared to be using the same equipment as I was – computers and elements of interactivity. If one looks closely however, the situation is far more complex and certainly the concerns are vastly different, -- with the use of interaction being pitched at an entirely different level to the application I envisaged. The response of the viewer, and the response of the artwork to the viewer, were inextricably entwined, inseparable from the concept behind the work. This was not the direction of my own proposal. I saw interactivity as an uncomplicated triggering device or tool; a way of activating the work and making it more dynamic.

I finally resolved this impasse by clarifying an issue that had continually provoked me since the inception of this project. Is interactivity necessary to interrogate the possibility of memory? Could it enhance the presentation of



my ideas?<sup>160</sup> What does it mean to have an interactive encounter? I find the question difficult because of its current almost cult-like status in contemporary art. The term is applied as an unconditional umbrella to anything from a CD-ROM to complex installations. But are there differing degrees or types of interaction? For example, the term is generally applied to work that involves technology but what of the act of simply viewing a 'passive' work of art. It could be said – and is – that since this involves the participation of the viewer it implies an interaction, if only in the sense of interpreting or using one's imagination.<sup>161</sup> For a work to be labelled interactive, however, there is an expectation that one is able to activate it in some way. A very basic example of this would be the now classic (one could almost say outdated) interface, where one clicks on or rolls over a specific point or hot spot, triggering an image, sound, QuickTime or change in narrative. For example in Graham Harwood's *A Rehearsal of Memory* (1995), the spectator faces a projected, composite image of a body complete



Fig. 19. Graham Harwood, detail from *A Rehearsal of Memory*, 1995.

<sup>160</sup> I had initially asked whether the inclusion of some form of this would enhance the presentation of my work – whether the experience of remembering was an interactive one?

<sup>161</sup> David Rokeby, "Transforming Mirrors: Subjectivity and Control in Interactive Media," in *Critical Issues in Electronic Media*, Simon Penny (ed.), New York: State University of New York Press, 1995, p. 134.

with scars and tattoos.<sup>162</sup> Viewers use a mouse to scroll over these markings and flesh, triggering various sounds, imagery comments or text.

It was this type of interchange – I would almost call it navigation now – with a work, that was my first introduction to the concept of interactivity. Much of the criticism leveled at this type of use (though not necessarily at this particular work) was that although it often claimed to allow the viewer to take an active rather than quiescent role, in reality this was often severely limited and controlled. In addition did this form of interchange really add anything to the experience of the work? As Peter Lunenfeld states, ‘yes, there is interaction, but to what point beyond demonstrating that interaction itself is possible.’<sup>163</sup> Increasingly the whole notion of interactivity is being interrogated. As I have previously established, to interact is to act reciprocally. It implies a mutual exchange. David Rokeby classifies a work as interactive if it ‘involves a dialogue between the interactor and the system making up the art work. The interactive system responds to the interactor, who in turn responds to that response.’<sup>164</sup>

Using Rokeby’s definition, most experiences of interactivity (at least in the context of art works) are ‘reactive’ rather than ‘interactive.’<sup>165</sup> His *Very Nervous System* (1986 – 1990) is an interactive space where body movement is used as the catalyst for creating sound.<sup>166</sup> Here the system reacts to movements made by the spectator who in turn reciprocates. In a

<sup>162</sup> I saw this piece in the exhibition *Digital Aesthetics-One*, Ivan Dougherty Gallery, Sydney in 1996. See [http://www.noemafab.com/sections/specials/netmag\\_magnet/ir/gnet/scene2.htm](http://www.noemafab.com/sections/specials/netmag_magnet/ir/gnet/scene2.htm) and <http://mitpress2.mit.edu/e-journals/Leonardo/isas/newhorizons2000/harwood.html> for more information (last visited 23/5/02).

<sup>163</sup> Peter Lunenfeld, *Snap to Grid: A User's Guide to Digital Arts, Media and Cultures*, Cambridge, Mass.: MIT Press, 2000, p. 164.

<sup>164</sup> Rokeby, “Transforming Mirrors: Subjectivity and Control in Interactive Media,” in *Critical Issues in Electronic Media*, Simon Penny (ed.), p. 137.

<sup>165</sup> I am using Rokeby’s terms here. David Rokeby: “Lecture for “Info Art”, Kwangju Biennale”, (Korea 1995), <http://www.interlog.com/~drokeby/install.html> (visited 9/01/01).

<sup>166</sup> See David Rokeby, <http://www.interlog.com/~drokeby/vns.html> (visited 22/5/02) for a description of this piece.

sense the work is created as a result of participation. I watched a video of Rokeby performing with this piece.<sup>167</sup> He was totally absorbed with an



Fig.20. David Rokeby, in *Very Nervous System*, in the street in Potsdam.

awareness of his body movement in space and the different combinations of sound invoked. He played the space like an orchestra. I had a similar response to Nigel Helyer's interactive sound installation, *Caliban's Children*,

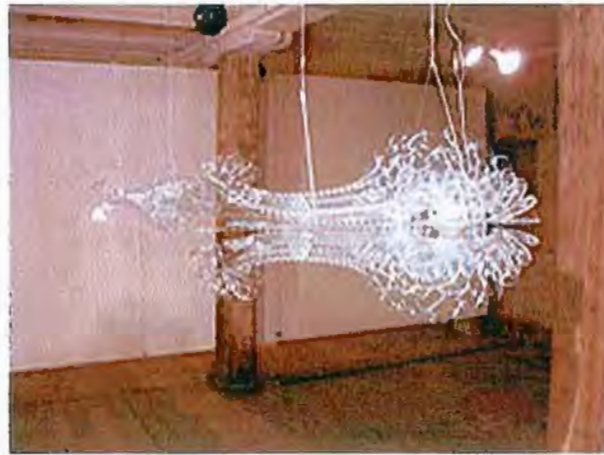


Fig.21. Nigel Helyer, *Ariel*, from *Caliban's Children*. Interactive sound-installation, laser cut acrylic and audio electronics.

which consisted of four laser-cut acrylic sculptures that responded acoustically to body proximity.<sup>168</sup> It was the movement of my hands and the sense of control over the tones I was able to conjure that held my attention rather than the music itself.

<sup>167</sup> As part of a workshop he gave at Solar Circuit, Hobart, 2002.

<sup>168</sup> wild2002, Bond Store, T.M.A.G. See <http://www.wild2002.com/bios/helyer.htm> for further information.



This brings to mind my encounter with another work that could be classified as interactive, Jeffrey Shaw's *Legible City* (1988–1991).<sup>169</sup> I rode a (stationary) bicycle, navigating through a simulated three-dimensional representation (the buildings were letters) of city streets projected onto a large screen in front of me. As I turned so did the impression on the screen, if I pedaled faster the sense of motion increased, I could even ride through

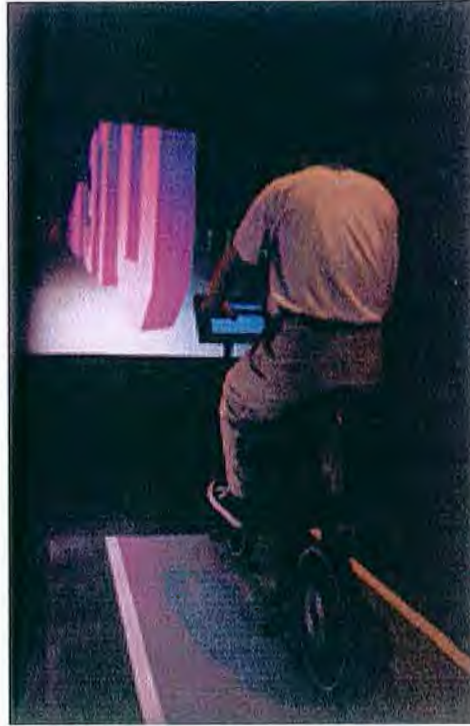


Fig.22. Jeffrey Shaw, *The Legible City*, 1989/92, Silicon Graphics computer, modified bicycle, video, projector, projection screen. Dimensions variable.

or between the letters. I became totally immersed in my actions. This kind of interactivity left no space to sense anything other than the action. The doing and the control became the experience.

With remembering, however, it is the memory image that is the experience rather than the activity or cues that provoked it. Rokeby states that the bulk of our encounters with the visual arts, film and television are ones where something happens to you whereas the promise of interactivity is that this

<sup>169</sup> I saw this piece in the exhibition *The Boundary Rider: 9<sup>th</sup> Biennale of Sydney*, A.G.N.S.W., 15/12/92 – 14/3/93.



becomes something that you do.<sup>170</sup> I contend that the experience of remembering is mostly passive, something happens to you provoking a memory. It is a reactive form of interaction – if it can be called that at all. As I have stated earlier, the interactivity occurs in our engagement with the memory – in the way the imagination is stimulated, the questioning, the dialogue, the narrative it invites.<sup>171</sup> Secondly, it is the memory image and our fascination with it that forms the basis of this experience, in preference to an emphasis on doing something to bring about some form of change. Rather than placing an emphasis on a particular media or interaction, what became important for me were the characteristics, as I perceived them, of the memory image and the way these operate.

Something stimulates the mind and a memory image appears: a fragment. Existing in isolation, it seems obscure, ambiguous and irresolvable. Will it stay or evaporate? In comparison with the image, what activates it is either irrelevant or unknown. The property of this image is such that it invites our participation. This is a crucial point, the relationship we enter into – the form of engagement. The memory image has a particular quality. It hovers, leaving space for contemplation. Evocative, irresolute – it invites us to fill it out – pin it down – weave a story. We know it to be peculiarly ours alone. It has a sense of familiarity – preciousness – something lost. It demands our emotional involvement. Trance-like, it tugs and stirs – teasing. When was that? Who was there? Where was I? What happened? It asks more questions than could possibly be answered. Resonance – the ripples spread. It opens up what can be called a space of possibility.<sup>172</sup> I am reminded here of a quote by Tjebbe van Tijen. ‘Memory is as a skeleton of related events joined together by our imagination in such a way that the skeleton can even jig.’<sup>173</sup> The varying physical properties of the recollective memory image are diverse and reflect the perceptions and characteristics of the individual, but I feel that the intrinsic element is the level of engagement solicited – it invites our participation. The memory image needs an

<sup>170</sup> Rokeby, “The Construction of Experience : Interface as Content,” <http://www.interog.com/~drokeby/experience.html> (visited 13/03/01).

<sup>171</sup> See my comments in section titled “Is Recollective Memory Interactive?”

<sup>172</sup> I should note here that Gary Hill also uses this phrase. See Regina Cornwell, “Interview with Gary Hill,” in George Quasha and Charles Stein, *Tall Ships: Gary Hill's Projective Installations – Number 2*, New York: Barrytown Ltd, 1997, p. 44.

<sup>173</sup> Tjebbe van Tijen, ‘Ars Oblivivendi’, <http://www.acc.at/meme/svimp/panel/msg00088.html> (visited 13/03/01).

audience and, by implication, a story to complete it, to make sense and draw it into a larger context. As Brenda Laurel states 'you either feel yourself to be participating in the ongoing action of the representation or you don't.'<sup>174</sup>

### ***Strategies of Engagement***

Rather than trying to limit myself to a particular media or interactivity per se, I concentrated instead on work that I felt embodied these features, that demanded an exchange and had the power to absorb; focusing on individual pieces as opposed to a representative body of work by a particular artist. The works discussed (*ScruTiny in the Great Round* – Tennessee Rice Dixon and Jim Gasperini, *Tall Ships* – Gary Hill, and *The Passing* – Bill Viola) were inspirational for me. Each uses a variety of techniques to engage the viewer in ways that I feel are reminiscent of the memory image. All make use of fragmentation as a device to encourage narrative. In *Tall Ships*, Hill entices the viewer into dialogue with his projections. In *The Passing*, it is the particularly intense visual quality of the work and the ways in which Viola renders the familiar barely recognizable that holds attention and promotes the exchange. Dixon and Gasperini use collage and ambiguity to provoke association in *ScruTiny in the Great Round*.

**ScruTiny in the Great Round (1995) by Tennessee Rice Dixon and Jim Gasperini. Sound contributions by Charlie Morrow.**

There is a story line to this piece but it's more of a story that's built from association. More like a poem. Where there's many elements – fragments and glimpses of things that when put together in the end create a story but everyone interprets it differently.<sup>175</sup>

The CD-ROM *ScruTiny in the Great Round* is an interactive collage of imagery, animation, poetry and music.<sup>176</sup> First introduced to the work in

<sup>174</sup> Brenda Laurel, *Computers as Theatre*, Reading, Mass.: Addison-Wesley Pub., 1991, pp. 20-21.

<sup>175</sup> Interview with Tennessee Rice Dixon on *ScruTiny in the Great Round*, CD-ROM by Tennessee Rice Dixon and Jim Gasperini with music and sounds by Charles Morrow, CA.: Calliope Media, 1995.

<sup>176</sup> See <http://www.thing.net/~relay/scrutiny/index.html> and <http://www.thing.net/~relay/main.html> for more information (last visited 23/5/02).

1995, I came across it again in the exhibition *Burning the Interface*<sup>177</sup> and still find it compelling today. It was responsible for my initial interest in computer-manipulated imagery. I realized the possibility of creating pieces that were both beautiful and evocative, qualities I felt were sadly lacking in much computer-based work produced at the time.

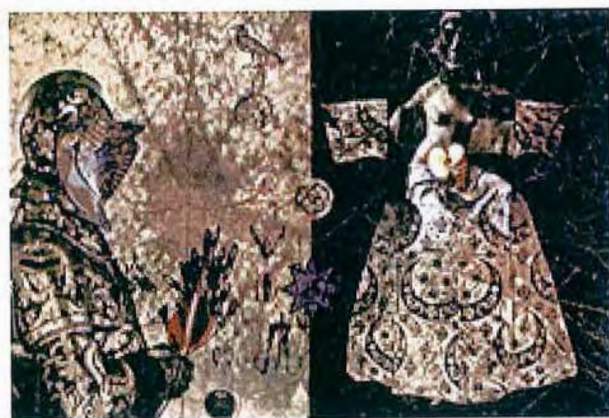


Fig.23. Tennessee Rice Dixon and Jim Gasperini, scene from *Scrutiny in the Great Round*, 1995, interactive CD-ROM.

Tennessee Rice Dixon originally conceived *Scrutiny in the Great Round* in 1991 as a limited-edition accordion-fold book of the same title. Later, Jim Gasperini collaborated with her to transform it from book to CD-ROM. She has commented that the transition from making books, ‘which are pictures in a series of pages with an element of time’, to working with the computer and moving images was very natural for her, adding that the addition of sound, animation and text has given depth to the original ideas and fleshed out the pages.<sup>178</sup>

*Scrutiny* consists of twelve collaged scenes (one could think of them as pages) each representing a moment in the cycle of regeneration and the eternal encounter between female and male. They have a dream-like sensibility, embedded with symbols and artifacts from cultures around the world. Apart from being visually beautiful in its own right, every tableau contains a variety of hidden offerings in the form of imagery, animation, sound or text. (I cannot help but compare this heavy working of the image

<sup>177</sup> *Burning the Interface*, Museum of Contemporary Art, Sydney, 27 March – 14 July 1996.

<sup>178</sup> Interview with Tennessee Rice Dixon on *Scrutiny in the Great Round*, CD-ROM by Tennessee Rice Dixon and Jim Gasperini with music and sounds by Charles Morrow.

with the way in which Dixon hand-worked the pages for her book.) I am alerted to the possibility of these by tone and the fact that the cursor glows as I scroll over the 'hot spots'. Additionally, each composition appears in two guises, Sun and Moon (the color palette of the Sun scenes is warm while that of the Moon is cooler). I can move between the two levels of the images at the time or choose to follow them individually. There is no single path through the work. A loose circular design allows me access to each



Fig. 24. Tennessee Rice Dixon and Jim Gasperini, scene from *Scrutiny in the Great Round*, 1995, interactive CD-ROM.

picture in turn or enables me to retrace my footsteps. Alternatively I can select from a menu or choose to allow the sequences to appear and the various animations to play without having to move the cursor around and interact.

The music is a crucial element in setting the mood for each image. Charlie Morrow describes any collage as being four-dimensional, with the implication that it is the sound that has the potential to achieve this.<sup>179</sup> In this instance he is right. Morrow has managed to combine subtle, diverse elements that when triggered by the scrolling mouse combine with the overall melody to form a whole.

Dixon has used collage (mostly found components) extensively in her art-making describing the technique as a way of 'bringing together complex

<sup>179</sup> Interview with Tennessee Rice Dixon on *Scrutiny in the Great Round*, CD-ROM by Tennessee Rice Dixon and Jim Gasperini with music and sounds by Charles Morrow.

and fragmented ideas into one field of vision.’<sup>180</sup> This is where the power of the piece lies for me, apart from the beauty of the imagery, which is



Fig.25. Tennessee Rice Dixon and Jim Gasperini, scene from *Scrutiny in the Great Round*, 1995, interactive CD-ROM.

another way of enticing the viewer. As with *Tall Ships*, rather than the interactive component being important (it is really just a form of navigation and plays just as well without it), the real interactivity is in the multiple meanings and the narratives evoked from the brief fragments and disparate elements. As I chart my course through the eclectic imagery/animations that is *Scrutiny* I am reminded of the equally eccentric collection of internal imagery and the multiple interpretations and stories that they invite.

### Gary Hill, *Tall Ships* (1992)

... [T]he work itself becomes a medium of exchange.<sup>181</sup>

Michael Duncan says of Hill that he transforms his themes 'into immediate sensory experience.'<sup>182</sup> *Tall Ships* is a video environment that lives on in the imagination. Twelve projected black and white images of people in varying

<sup>180</sup> Interview with Tennessee Rice Dixon on *Scrutiny in the Great Round*, CD-ROM by Tennessee Rice Dixon and Jim Gasperini with music and sounds by Charles Morrow.

<sup>181</sup> George Quasha and Charles Stein, *Tall Ships: Gary Hill's Projective Installations – Number 2*, New York: Barrytown Ltd, 1997, p.35.

<sup>182</sup> Michael Duncan, "In Plato's Electronic Cave," *Art In America*, 6, Vol. 83, June, 1995, p.69.



states of repose are arrayed along both sides of a dark corridor with a single image projected onto the end wall.<sup>183</sup> The figures appear to be waiting. They are the only source of light. As I enter the space, and approach one of these apparitions, hidden sensors are triggered. The 'person,' initially seen as far away and small, appears to respond and comes toward me until it is approximately life-size. Who is this person? What do they want? The body language suggests he/she is trying to see me, to communicate, make eye contact. I return the gaze. They look as though they have something to say. If I walk away so do they, if I return they turn around too and the exchange continues.



Fig.26. Gary Hill, installation view of *Tall Ships*, 1992, video installation with modified monitors, projection lenses, computer-controlled laserdisc players and switching runner mats for interactive triggering.

The experience is profound. My initial response was disorientation and a fear of entering the cavern-like blackness. I blundered towards the first figure. An elderly gentleman got up and walked towards me. From that moment I was lost. What took place was an encounter with an image that was so complete I found myself echoing movements and gestures, responding to what I perceived as implied appeals, playing games with phantoms. 'The membrane between viewer and projection in *Tall Ships* becomes permeable,'<sup>184</sup> suggest George Quasha and Charles Stein. As my eyes adjusted I stood quietly in the dark and watched my fellow spectators. I observed similar reactions to my own. Pulled into a shared space with

<sup>183</sup> Hill has also showed larger versions of this work, which include 16 images. The piece I saw was part of the exhibition *Space Odysseys: Sensation and Immersion*, at the A.G.N.S.W., (18<sup>th</sup> August – 14<sup>th</sup> October 2001).

<sup>184</sup> Quasha and Stein, *Tall Ships: Gary Hill's Projective Installations – Number 2*, p. 35.

these images, people postured, giggled softly, stared. Cruised. Passed each other in the dark. The audience was an intrinsic element in this composition. Who was the viewer and who the viewed? The residual light from each image highlighted faces and gestures, which seemed to dissolve into the piece, becoming part of, and completing the circle.



Fig.27. Gary Hill, detail from *Tall Ships*, 1992.

There is no audio component in this work. Hill ‘imagined filling the space with silence.’<sup>185</sup> Indeed, the absolute quiet is deafening in the gloom and is further emphasized by the occasional whispers and shuffles. ‘At the verge of communication, where you stand in the piece, you may feel the pressure of the possibility of speaking.’<sup>186</sup> Hill says of its reticence that you feel there must be something to say. ‘And what does one possibly say when it’s radically stripped down to this point?’<sup>187</sup> It is at this apex of ‘stripped down-ness’, at this point of articulation where nothing is said but so much implied, that the real confrontation takes place. The silence, the darkness, the mirrored muteness of the figures induces an almost trance-like state of contemplation – a slow and intimate ‘absorption of information into

<sup>185</sup> Regina Cornwell, “Gary Hill: An Interview,” in *Gary Hill*, Robert C. Morgan (ed.), Baltimore: The Johns Hopkins University Press, 2000, p.225.

<sup>186</sup> Quasha and Stein, *Tall Ships: Gary Hill’s Projective Installations – Number 2*, p. 36.

<sup>187</sup> Regina Cornwell, “Interview with Gary Hill,” in Quasha and Stein, *Tall Ships: Gary Hill’s Projective Installations – Number 2*, p. 50.



consciousness.<sup>188</sup> It opens a gap, which we fill with our own connotations and queries.

The apparitions in *Tall Ships* have been described as wraiths returning for one last lingering contact.<sup>189</sup> In them I found my quintessential recollective memory image. It was not just the physical appearance, although the similarities as I conceive them are considerable; for example bear in mind



Fig.28. Gary Hill, detail from *Tall Ships*, 1992.

the lack of color or any discernable edge, the difficulty in making out the features, and the blurring. Consider, too, the illumination – these representations seem to radiate light, emerge from the darkness and hover in the space. Nor is it the way the figures slowly reveal themselves, becoming more discernable over time. Even more significant is the fact that the images are decontextualized, fragmented, have no time. They exist in a void waiting not only for a cue to set them free, but for a narrative to catch them, for a context. They are projections in the literal sense but in the silence, into the gap that is opened, I am able to propel my own chimeras. The two become entangled. My visions materialize and become embedded.

<sup>188</sup> Robert C. Morgan, "Gary Hill: Beyond the Image," in *Gary Hill*, Robert C. Morgan (ed.), p. 10.

<sup>189</sup> Quasha and Stein, *Tall Ships: Gary Hill's Projective Installations – Number 2*, p. 16.

'Distinctions unfold of their own accord, erupt from our past, from history, from art, from the dark. We project. We lay it on. We meet their silence with a secret story, and no one will ever know'<sup>190</sup> comment Quasha and Stein.

If one applies Rokeby's definition of the word, *Tall Ships* is not interactive but rather reactive. In its engagement with the viewer, however, it reaches a level of interactivity that most artists working in this area could only aspire to. The initial triggering of the image, (which the majority of people would deem interactive), is only the starting point, necessary to bring the phantoms to life. The power of the piece (for me, the real interactivity) comes in the way it provokes and coaxes memories of other encounters and impressions; in the way it leaves itself radically open to replication and allows the interlacing of story and interpretation. The imagery resonates with untold potentiality. Hill describes wanting to deliberately create an open experience, illuminating a space of possibility for the viewer.<sup>191</sup> In a sense this work is about engagement, an intimate dialogue. It demands it and, like the memory image, is not complete without our association and response to give it meaning.

### Bill Viola, *The Passing* (1991)

Though one may experience Viola's work in a social context typified by the museum gallery, the work itself retains a profoundly private character. Not unlike complex music, these time-based works insist on a concentrated focus. And because they refuse to describe the world in any recognizable documentary fashion, they can only succeed in constructing a model of space defined by memory and acute self-awareness.<sup>192</sup>

Bill Viola has had more than a fleeting interest in the visions of the mind. *The Theater of Memory* (1985) is a video/sound installation that takes, as its subject matter, the triggering of neurons in the brain and related mental pictures. *Déserts* (1994) concentrates on the ebb and flow of

<sup>190</sup> George Quasha and Charles Stein, *Viewer: Gary Hill's Projective Installations – Number 3*, New York: Barrytown Ltd, 1997, p.30. Although their remarks are directed at another installation, *Viewer*, I feel they have relevance.

<sup>191</sup> Regina Cornwell, "Interview with Gary Hill," in Quasha and Stein, *Tall Ships: Gary Hill's Projective Installations – Number 2*, p. 44.

<sup>192</sup> David A. Ross, in *Bill Viola*, curated by David A. Ross and Peter Sellars; with contributions by Lewis Hyde...[et al.], New York: Whitney Museum of American Art in association with Flammarion, Paris – New York, 1997, p. 29.

representations on the surface of the mind. Likewise he describes the imagery in *Pneuma* (1994) as 'indistinct, shifting, and shadowy, the projections become more like memories or internal sensations rather than recorded images of actual places and events ...'<sup>193</sup> The installation *Passage* (1987) contains footage of a child's birthday party. Played back at 1/16 normal speed and projected to monumental proportions it comments on the importance that such rites of passage assume in our own reminiscing.

To my mind however, *The Passing* is a more direct evocation of the experience of the internal ramblings of the mind. Made in remembrance of his mother, Wynne Lee Viola, it has an emotional rawness that compels. To cite Viola, the work 'depicts a twilight world hovering on the borders of human perception and consciousness, where the multiple lives of the mind (memory, reality, and vision) merge.'<sup>194</sup> The subliminal, richly symbolic imagery evokes a feeling of fantasy and internal anamnesis. In *The Passing*, a sleeper dreams – images flicker and play across the surface of his mind. Disconnected and fragmentary sequences are linked together by the abstract play of light and shadow. Every now and then the sleeper wakes, upsetting the ebb and flow of visions, then slowly submerges to drift in phantasmal isolation. The measure of the overall piece has a rhythm reminiscent of a faltering heartbeat. Lyrical, weightless interludes are jostled by the abrupt, the staccato, before returning to a state of suspension. The defining frame of viewing his work on a rectangular screen is offset by his use of light – the way Viola floats the imagery. Because you are often not quite sure of what it is you are looking at, the questioning and associations make you go beyond the boundaries of the screen.

As a viewer one moves from real time – the waking sequences of the dreamer always seem to be in real time – to the hallucinatory cadence of the dreams. Viola achieves this in a variety of ways. There are moments when time itself seems to flow backwards. For example when a figure is propelled up out of the water into the air. Alternatively the footage is literally slowed. In another episode a young child looks directly into your eyes and comes towards you – the action has been slowed dramatically so that the characters

<sup>193</sup> Bill Viola, in *Bill Viola*, curated by David A. Ross and Peter Sellars; with contributions by Lewis Hyde...[et al.], New York: Whitney Museum of American Art in association with Flammarion, Paris – New York, 1997, p. 111.

<sup>194</sup> Ibid., p. 96.

appear to move as if in some sort of weary, sonorous dance. The underwater scenes have a similar effect. Clothing and objects undulate sedately. The light ripples. We are in limbo.



Fig.29. Bill Viola, scene from *The Passing*, 1991, videotape.

Viola's dexterity with the camera is exemplary. He moves with it – back and forth – or in a languorous pan. His technique of manual focus heightens the intensity of the moment. Details slowly achieve limpidity, only to melt away again to blur and darkness. Due to his manipulation of focus, lighting (dark in the extreme), and suspended time, I often do not quite comprehend, at first, what it is that I am looking at. Making associations from the previous incident sometimes helps me determine what I am seeing. Occasionally I am still unsure. The scenes are equivocal, vague, hypnotic. Understanding dawns only slowly. The effect is heightened by his use of disorienting camera angles. I float, unsure of where to put myself. Interestingly, Viola also mentions this.

Think of how you experience events in a dream or memory. We call it 'the mind's eye'. Usually, in recalling a scene or describing a dream, we do so from a mysterious, detached third point of view. We 'see' the scene and ourselves within it from some other position, quite often off to the side and slightly above all the

activity. This is the original camera angle. It existed long before there was even such a thing as a camera.<sup>195</sup>

What I have called his 'home video' footage (that is footage of children and family activities), especially accommodates this trait. Filmed with the appearance of an observer image the result is eerie, disturbing; for instead of a sense of detachment the camera is placed so close to the subjects that I am almost looking over their shoulders. It feels claustrophobic. This, combined with an impression of time gone awry, adds an ominous sense of rawness to an event that is otherwise quite familiar.



Fig.30. Bill Viola, scenes from *The Passing*, 1991, videotape.

A lot of the imagery Viola uses is of the every-day – suburban streets, interiors of houses, family gatherings. But they are altered. Through techniques such as camera angle, slow motion, blurring, the use of night photography or artificial light sources, to present a scene, he makes the customary inexplicable. One could talk about it in terms of the uncanny. It draws me in. The knowable becomes elusive, evocative, unfamiliar. I experience the phenomenon of understanding being just beyond my reach – it is on the tip of my tongue. I **should** identify what it is that I am seeing. I have the immensely frustrating experience of almost recognizing. My mind stretches – I am in the domain of the memory image. It induces a state of reverie – an almost hypnotic condition that allows my own phantasms to rise to the surface.

This visual element is echoed in Viola's use of sound. Often elements from one scene will continue to play through other scenes, building layers and coloring my impressions. At times, usually when the sleeper abruptly returns to wakefulness, it reaches a jarring pitch. More often though it

<sup>195</sup> Bill Viola, *Reasons for Knocking at an Empty House: Writings 1973-1994*, edited by Robert Violette in collaboration with the author; introduction by Jean-Christophe Ammann, Cambridge, Mass.: MIT Press, 1995, p. 93.



registers as a barely heard resonance – particularly in scenes that depict some sort of family event. Here, because the sound is slowed and distorted and the volume low, it is barely perceptible. It tugs at my consciousness, an undercurrent with only the occasional surfacing of something audible or real. Again I have the feeling of standing on the threshold of recognition.

Because of the sense of familiarity with so much of the imagery, I can insert myself into the scene, imagining remnants from my own experience. Because I see only a small fragment the questions are intensified. My engagement is total – complete. What is it that I am looking at? Who is it? Where was that? I immediately start to work this remnant into a larger narrative. Of course Viola has already done this – he flits from one sequel to another, a sort of time-based collage. Joined with an emphasis on light and shadow the associations seem prescribed. But are they? With their vague familiarity and dream-like connotations they work on a subconscious level. With his emphasis on the visual characteristics of the memory image, Viola introduced me to a greater range of available techniques. Like Gary Hill's apparitions these images entice, question and offer a space for the unrestrained imagination.

### ***In Conclusion***



Fig.31. Gary Hill, *I Believe It Is an Image in Light of the Other*, 1991-92. *Mixed media installation. Seven channel video, modified TV tubes for projection, books and speaker.*

I conclude this chapter with the comment that these last mentioned pieces were pivotal in relation to the qualities that I sought in my own project. But



before discussing the development of my own ideas and practice there is one further influence in the field of video installation that bears mentioning. This was the possibility of animating objects with imagery as opposed to being necessarily restricted to a screen or wall.

Gary Hill has again been an influence here. His *I Believe It Is an Image in Light of the Other* (1991-92) is a mixed media installation containing video, modified TV tubes for projection and books. Although I have not experienced this work directly I was mesmerized by the concept of delicate projections onto books scattered about a floor – the figures and faces hovering, as it were, on the open pages of text. The projectors hang from the ceiling emitting their tiny circles of light; neatly inserted into the installation rather than seen as an annoying apparatus to be concealed.



Fig 32. Gary Hill, *Inasmuch As It Is Always Already Taking Place*, 1990. Sixteen channel video/sound installation. Sixteen one-half inch to 21 inch B&W TV tubes positioned in horizontal inset in wall.

Another work, *Inasmuch As It Is Always Already Taking Place* (1990), consists of sixteen black-and-white TV tubes of various sizes, positioned in a horizontal inset in a wall; each one containing a looped video of a section of body. They resemble a scattered aggregate of still images; imagery, however, that contains a modicum of motion and sound.



Fig.33. Bill Viola, detail from *The Sleepers*, 1992, video installation.

A variation of this idea can be found in Bill Viola's video installation, *The Sleepers* (1992), which is composed of seven (55 gallon) metal barrels filled with water. Each barrel contains a submerged black-and-white video monitor that plays imagery of real-time close-up recordings of a person's face whilst sleeping.

These pieces extended, for me, the potential of projection to include the concept of the image as object. With the work of Lynette Wallworth I had the opportunity to physically experience this. Her *Hold Vessel #1* combined exotic video glimpses of the natural world with the exquisite sensation of capturing and holding these images in delicate white bowls.<sup>196</sup> Entering a narrow space where three overhead projectors shone their imagery onto the floor, I was invited to catch these apparitions in the bowls provided. The feeling was one of compelling intimacy as I played with (of course I also tried to catch them in my hands and with my body), and inspected these elusive flickering phantasms.

These works do not deal with memory per se and my discussion is necessarily brief. I mention them because of the way they expanded video installation, for me, to include the possibility of animating objects either through projection or other means. Up until now I had merely thought

<sup>196</sup> I saw this piece at the exhibition *Space Odysseys: Sensation and Immersion*, at the A.G.N.S.W., (18<sup>th</sup> August – 14<sup>th</sup> October 2001).

about the memory image transforming objects – of becoming an object in its own right – but had not physically experienced or tested my ideas. In the following section I will describe in detail the development of my own work on the memory image.



Fig.34. *Lynette Wallworth, detail from Hold Vessel #1, 2001, projections, digital video imagery, collection Australian Centre for the Moving Image.*

## PART FIVE

### HOW THE PROJECT WAS PURSUED

#### *Introduction*

My research project developed in three stages. The initial period involved learning, and experimentation with interactivity, but primarily continued the use of still imagery. The second stage saw further general research on interactive programming and sensors, with a shift to digital video and an emphasis on the memory image. I had formed the building blocks. In the final stage I incorporated the techniques learned; tested aspects of installation; and produced the exhibited work.

#### *The First Phase*

I decided to continue utilizing the computer because it was the medium that I had been most recently working with and I was still very interested in its capacity for blending and layering. I was intrigued by its potential. I saw it as a useful tool for combining moving imagery, stills and sound and I had wondered about the possibility of introducing an interactive element into the project. There was an assumption, perhaps only on my part, that because I used computer technology this was the next logical step. Additionally, the discourse of experience and interactivity seemed intricately bound together; it was seen as a way of extending the complexity of imagery.<sup>197</sup> This appeared to suit my intention of researching the experience of remembering and, after attending a conference in Sydney, *The Language of Interactivity*, CD-ROM work seemed a viable avenue of exploration.<sup>198</sup>

My initial task was to learn and understand the capabilities of the programs I felt I would need. I gathered material, building up a collection from which to work, mostly using imagery I had scanned previously. As I was familiar with PhotoShop and wanted to introduce movement and resonance into the

<sup>197</sup> For example, see Timothy Druckrey's essay "Revisioning Technology", in *Iterations: The New Image*, Timothy Druckrey (ed.), New York City: International Center of Photography, 1993, pp. 23-37.

<sup>198</sup> The Australian Film Commission organized the conference at the ABC Ultimo Center, Sydney, 11<sup>th</sup>-13<sup>th</sup> April, 1996.



work, I concentrated on Adobe Premiere, which would allow me to manipulate and animate stills, and combine this with video and sound.



Fig.35. *Ruth Frost, scene from Light Swing Movie. Digital animation using still photographs.*

My first attempts used still images, fading one into the other, rather as I had previously put sequencing to use. I animated them using techniques such as lighting (I would change the intensity and position of the light source in PhotoShop and transport these back into Premiere), sizing, and blending



Fig.36. *Ruth Frost, scene from New Hall Movie. Digital animation using still photographs.*

various layers, one on top of the other. In addition I started collecting sound clips from various sources and worked on them with a sound program, SoundEdit 16, before incorporating them into Premiere. I called

my early animations (such as *Light Swing Movie*, *New Hall Movie*, *BACKLIT movie*, *Try3 full movie sound*, *Try 5 Movie* and *Try 9 Movie*<sup>199</sup>), working



Fig.37. Ruth Frost, scene from *New 10 Movie*. Digital animation using still photographs.

sketches or explorations. I was really just trying to learn my tools. These culminated in *New 10 Movie*, an animated version of the exhibition *Safe House*. To an extent I had achieved my aim of wanting to incorporate movement and sound into this piece.

By this stage I realized I needed to extend my capabilities to include motion, so my next step was some tentative experiments with video. I initially captured pre-existing movies but then shot and digitized my own footage using analogue film. (*Hallrun Movie*, *Dancing Movie*, *Humming*



Fig.38. Ruth Frost, scene from *Hallrun Movie*. Digital animation using still photographs.

<sup>199</sup> PLEASE NOTE. I have made copies of all material mentioned in Phase One and these are available for viewing on the separate CD-ROM, *The First Phase CD1*, that accompanies this exegesis.



*Hall Movie, Revised movie.*) All the work produced at this time was small (160 x 120 pixels). This was largely because of computer constraints but I still saw this early phase as being very experimental. Creating these tiny



Fig.39. Ruth Frost, scene from *Dancing Movie*. Digital animation using still photographs.

clips helped me try to define what I meant by memory. At this stage I had not read any theory. I started to think of them as small cameos, as fragments or flashes, a product of the act of recollection. My main concern was with how could they be put to use. I needed some sort of structure to underpin them.

This line of thought brought me back to one of my original reasons for staying with the computer and using it to investigate memory – the possibility of interactivity. I had wondered if there was a link between this and the act of remembering. I thought of the interactive process as a trigger, something that could provoke a memory fragment or chain of memories. Consequently I started to explore the program Macromedia Director. Director is a program that enables the bringing together of QuickTime movies, sound and still imagery. The language used is primarily of the theatre. Items are brought in as cast members, assembled and organized in a score, and essentially perform on a stage. They are controlled using a programming language called Lingo which allows for, among other things, events to happen once the keyboard is pressed, the mouse clicked, or cast members are activated on the stage.

After some initial experiments (*All together, Map movie*) and inspired by Bachelard's book, *The Poetics of Space*, I settled on the notion of exploring

memory through the various rooms, spaces and objects that constitute the home. ‘... [T]here exist for each one of us an oneiric house, a house of dream memory, that is lost in the shadow of a beyond of the real past.’<sup>200</sup> Bachelard gave me a glimmer of what might be possible. I imagined an ordinary domestic space where, as one explored it, memories or fragments of imagery would break through. I wanted a sense of numerous areas co-existing within the one place. *Narryna Installation 320x240* was the result.



Fig.40. Ruth Frost, hall scene from *Narryna Installation*. *Interactive Director movie using video, animation and still photographs.*

This was photographed at one of Hobart’s historic homesteads, Narryna, and assembled in *Director*.<sup>201</sup> The piece started with a static photograph of the front hallway. As you scrolled the mouse over various parts of the picture it was possible to enter and explore, again through still images, some of the rooms or to move up the stairs. Occasionally small QuickTime movies, which I intended as memory fragments, would be triggered. One literally moved, image by image, through the house. I could see the possibilities of spaces co-existing and of past times rupturing the present. Perhaps these small flashes could be put together into a complete story. However, apart from a few segments where the small cameos of video footage blended through into parts of the still imagery, I was far from satisfied.<sup>202</sup>

<sup>200</sup> Bachelard, *The Poetics of Space*, p. 15.

<sup>201</sup> PLEASE NOTE. The images that comprise this piece are also available for viewing in the folder, “Narryna Images”, on the CD-ROM, *The First Phase CD1*, that accompanies this exegesis.

<sup>202</sup> See, for example the folder called *Halrun* in the CD-ROM, *The First Phase CD1*, that accompanies this exegesis.



The site of Narryna was not ideal. Although I had chosen to work there because of a sense of history, it was a museum and gave none of the sense



Fig.41. Ruth Frost, stairway from Narryna Installation. *Interactive Director movie using video, animation and still photographs.*

of a lived-in home that I desired. The piece was also far too literal. The ability to navigate through the house might have suited a tourist brochure but had little to do with my own sense of remembering. The somewhat



Fig.42. Ruth Frost, bedroom scene from Narryna Installation. *Interactive Director movie using video, animation and still photographs.*

literal memory flashes were too few and far between. I wondered how I could direct people to the parts of the imagery that contained the flashes. Did it matter if all of them were not seen? What spaces or objects were more likely to contain memories? The most disappointing aspect was the experience of the piece. Although I had happily engaged with some screen-

based work in the past, in this instance having to scroll over an image with a mouse to navigate or trigger flashes was not an engaging one. I felt it had little in common with the way in which we remember. Scale was also becoming an issue; I felt the work needed to be larger. After seeing the piece projected for the first time I considered the possibility of using an actual space and of somehow activating the work within that space.



Fig.43. Ruth Frost, image from *Random Garage*. *Interactive Director* movie using still photographs.

Consequently I started experimenting with pressure mats and a motion sensor that were wired into an ADB computer mouse. When the sensors were triggered it meant effectively that the mouse had been pressed. This could be practically incorporated into the program Director by writing a command in Lingo that set an event in action once this happened. *Random Garage*, *Random Wedding*, *Pressure Experiment* and *Motion Experiment 3* were the results. They were 240 x 320 pixel Director movies, that used either small sections of the original *Narryna 320x240* or new material, but utilized a sensor to activate short QuickTime movies. In *Pressure Experiment* I used partially transparent video footage combined with overlying imagery; the process was made possible by using a property, in Director, which enables various layered cast members to be blended together.<sup>203</sup> In the *Random* Director movies and *Motion Experiment 3*, I tested a random programming technique that I continued using throughout the project.

<sup>203</sup> Another example of this can also be found in the folder called *Halrun*, in the CD-ROM *The First Phase CD1*, that accompanies this exegesis.





Fig.44. Ruth Frost, recreated scene from *Pressure Experiment*. *Interactive Director* movie using video and still photographs.

*Motion Interactive* was my next major attempt at tackling the issues raised by *Narryna 320x240*, although the ideas were still centered on the perception of a space activated by small memory fragments.<sup>204</sup> In this piece, a motion sensor linked to a mouse, triggered a haphazard series of small QuickTime movies. This time, instead of navigating through the house with the occasional memory remnant (QuickTime) being activated, the entire piece consisted of small fragments. These were mainly constructed from further photographs shot at *Narryna* and some video footage. It had a starting point (or photograph) and always ended in the same manner but otherwise any of three loosely based pathways were randomly selected. I introduced sound as a major component, adding another layer. I could see a number of possibilities for how this piece might be employed in a space. I imagined it being projected onto a wall with the sensor only activating when people ventured past. As it consisted of a number of small movies I also considered the possibility of breaking it into segments on different computers and arranging these in a space with various sensors as triggers.

<sup>204</sup> PLEASE NOTE. Both *Motion Interactive* and the individual movies that comprise this piece are available for viewing on the CD-ROM, *The First Phase CD2*, that accompanies this exegesis.

As it stood, however, *Motion Interactive* had a number of problems. The general motion sensor was too sensitive and even slightly moving an arm would set it off, begging the question of what was initiating the memory flashes and why. There was also a time lag problem with the delay, after the



Fig.45. *Ruth Frost, scene from Motion Interactive. Interactive Director movie using video, animation and still photographs.*



Fig.46. *Ruth Frost, scene from Motion Interactive. Interactive Director movie using video, animation and still photographs.*

sensor had been triggered, bringing no real sense of a proper cause and effect. I had a troublesome black flash on the screen before each of the movies played. The program I was using at that time, Director 5, was not responding well to my QuickTime movies. Even though they were still small in size they were using too much computer memory, causing jerky playback. Finally, although I had re-shot most of the Narryna imagery I



was still unhappy with the look of it – I could not quite shake the sense of the museum.



Fig.47. Ruth Frost, scene from Motion Interactive. *Interactive Director* movie using video, animation and still photographs.

*New 10 Movie*, *Random Garage* and *Motion Interactive* were probably the only significant pieces from this period. Although they are unfinished, the sudden flashes of imagery in *Random Garage* inspired later clips such as *closed doorflash mov*<sup>205</sup> while *Motion Interactive* has provided the starting point for much of my later work. I had achieved my objective of learning about and working with the programs I thought necessary, and had started to obtain an understanding of how elements of interactivity might be incorporated into this.<sup>206</sup>

### ***The Second Phase***

My son was born in April '98 and I subsequently took two years maternity leave. On returning from leave I felt it essential to reassess the aims and direction of my work. There were two main areas that I could see required further research. Firstly, I wanted to evoke for the viewer a sense of the experience of remembering. Did my assumptions about interactivity have a role here? And secondly, I wanted to concentrate on visually exploring the nature of the (recollective) memory image. How might we see memory in our mind's eye? In short, I wanted to try to recreate an impression of

<sup>205</sup> This movie can be found on the CD-ROM, *The Second Phase*, that accompanies this exegesis.

<sup>206</sup> At the time I was still looking for links between this and the way that we remember.

memory flashes or fragments which would be put together, in an as yet undecided way, to try and evoke the experience of remembering.

I faced a number of problems, firstly with the computer programs. Most had undergone quite major changes (e.g. Director 5 had evolved into Director 8) and required some relearning on my part. Rather than continue with Premiere, which I had been using to make my QuickTime movies, I turned to Adobe After Effects. It had been recommended for a more precise approach and greater capabilities but, once again, I was faced with mastering the necessary skills.<sup>207</sup>



Fig.48. *Ruth Frost, still from new curtain comp. Created in Adobe After Effects.*

I also shifted my emphasis from using mostly still imagery interspersed with some video to a more direct use of video footage. I decided on this course of action because although the memory image might be a relatively small remnant, I considered it a dynamic rather than a static entity. If the bulk of the work was to consist of video footage, however, I would need to improve both the quality of my source material and the way in which I captured this onto the computer (i.e. the way in which this footage was digitized). In addition, even if the resulting pieces were projected at a small size, the use of full screen video (as opposed to the tiny movies I had been making) seemed more appropriate. To overcome these problems I acquired a digital video camera (instead of the analogue model I had been working with) and taught myself the rudiments of its use. After some experimentation with

<sup>207</sup> See the movie, *new curtain comp movie*, on the CD-ROM, *The Second Phase*, that accompanies this exegesis.

downloading the footage I found an adequate program.<sup>208</sup> The full screen digital video footage was then imported into After Effects and worked on before being rendered – again as full screen digital video movies. Working in this way allowed me to save the movies back onto DV tape at this stage. Equally important, I had discovered that the compression capabilities in After Effects were not adequate for the quality I wanted. I needed to find a balance between the massive amount of computer memory used with full screen digital video, the capability of the program (Director 8), and the caliber of imagery I sought.

To clarify this point further, the computer I was working with was a Power Macintosh G3<sup>209</sup>. It did not have the capacity to smoothly play back a movie file the size of the full screen ones I was now producing – it was simply not powerful enough. I wanted to continue working with the computer in order to use the program Director 8 and therefore needed to compress my movies down to an acceptable size. The question was how to do this without losing too much quality, as I was still very concerned with the appearance of the imagery. In order to resolve the conundrum, I explored the compression settings available in After Effects before turning to Media Cleaner Pro; a program designed especially to deal with this. After extensive testing I was finally able to settle on an acceptable compromise between quality and file size.<sup>210</sup>

To all intents and purposes I had now assembled my tools. I had decided on full screen digital video. I used Final Cut Pro to capture it on to the computer; After Effects to work with the footage; Sound Edit 16 to work with the sound; Media Cleaner 5 to compress the rendered movies; and Director 8 to bring everything together.

I faced a further dilemma with my choice of Director for assembling and playing the various components of a piece. I had previously relied on its ability to blend layers of imagery (for example, I could play a video clip

<sup>208</sup> I first used Edit DV and later Final Cut Pro.

<sup>209</sup> This is what was available to me at the time, however, I had also decided in the interests of exhibiting the work I might be better off getting it to perform on this less powerful machine.

<sup>210</sup> See the CD-ROM, *The Second Phase*, for the QuickTime movies relating to these tests and Appendix 4, *Extract from Journal*, for the written results.



through a still image<sup>211</sup>) but found that this was not possible given the size of the QuickTime movies (both in file size and actual size) that I was now producing. I had to rely instead on discrete individual movies and the ways these elements might relate to each other or be brought together. If any actual blending or layering was to occur I had to contrive it myself in After Effects.



Fig.49. *Ruth Frost, still from early short walk mov. Digital video crafted in Adobe After Effects.*

Fig.50. *Ruth Frost, still from early hall walk mov. Digital video crafted in Adobe After Effects.*

With these technical decisions made, I again turned my attention to the visual characteristics of the memory image, focussing on making individual clips that could later be collated. I had found a new site to work with, a lived-in home with a sense of history. While recording, I tried to emphasize the experience of childhood by using the camera at a low angle (e.g. *early short walk mov* and *early hall walk mov*).<sup>212</sup>

Point of view was important, as I had discovered in my research on Field and Observer imagery.<sup>213</sup> In brief, Field imagery is experienced as seen and is more emotionally charged. Observer imagery has a sense of detachment, of one observing oneself. Although more mention is made of early memories being in the observer mode, I wanted to involve the viewer and to

<sup>211</sup> See, for example, *Blow*, in the folder *Old Blends* in the CD-ROM, *The Second Phase* that that accompanies this exegesis.

<sup>212</sup> PLEASE NOTE. I have made copies of all material mentioned in Phase Two and these are available for viewing on the separate CD-ROM, *The Second Phase*, that accompanies this exegesis.

<sup>213</sup> See section on Field and Observer imagery in Part Three, "The Memory Image," p. 39.

emphasize the intensity of the moment. I filmed primarily from the Field perspective (e.g. *early slow no sign mov*, *early backsteps mov* and *early red chair mov*).<sup>214</sup>



Fig.51. *Ruth Frost, still from early slow no sign mov. Digital video crafted in Adobe After Effects.*



Fig.52. *Ruth Frost, still from early red chair mov. Digital video crafted in Adobe After Effects.*



Fig.53. *Ruth Frost, still from mem. flash 1 mov. Digital video crafted in Adobe After Effects.*

I concentrated on deliberate short segments to emphasize the sense of a fragment, of a 'missing' before and after, sometimes montaging these with quite deliberate cuts and edits as opposed to the vagaries of interactive intervention (e.g. *mem. flash 1 mov* and *mem. flash 2 mov*). Occasionally a longer sequence would be broken up into disparate parts.

<sup>214</sup> Because of this I had initial problems with camera shake. I eventually used a lead weight on a pole, which I could attach my camera to, and this helped smooth things out.





Fig.54. David and Ruth with cat. *Silver gelatin photograph.*

Since much of the subject matter came from fragments of my own past I also tried to include some of the old snapshots from my childhood. However, these were interpreted by various viewers as ‘photographs of memories’ rather than actual memories, and eventually I mostly discarded them (e.g. *tree3long mov*, *snake mov* and *grandma flash mov*).



Fig.55. *Ruth Frost*, short mantel without masking. *Digital video crafted in Adobe After Effects.*



Fig.56. *Ruth Frost*, short mantel with masking. *Digital video crafted in Adobe After Effects.*

Further research on mental imagery offered a variety of technical strategies. After some testing, I began fading the segments in and out of blackness, as well as masking the edges of the imagery as a consistent technique (e.g. *short mantel mov (unmasked)* and *short mantel mov (masked)*).<sup>215</sup> Masking was also employed as a way of layering one section of footage over another. I devised a method for simulating a sudden flash of imagery (e.g. *early*

<sup>215</sup> This was a strategy I first used then abandoned. Later when I decided the masking was indeed relevant I had to remake most of the movies intended for the final pieces.

*clothes flicker mov*, *clothes flash mov* and *early red chair flash mov*) and I slowed or speeded up the timing of the clips (e.g. *early slow hall mov*, *saturated red frame mov* and *kitchen flash 50 mov*).



Fig.57. Ruth Frost, still from pink hat mov. Digital video crafted in Adobe After Effects.

Filters and effects were used sparingly. On occasion I used the Glow effect as a means to emphasize different areas (e.g. *the red hand mov*) and I explored blurring as a device, initially while I composed the movie in After Effects and later in the use of manual focussing (e.g. *into mov* and *mpink hat mov*). As I became more experienced with the program I incorporated some of the filters I had used previously in PhotoShop – mainly lighting –



Fig.58. Ruth Frost, still from unsaturated blue wall mov.



Fig.59. Ruth Frost, still from saturated blue wall mov.

to intensify sections (e.g. *guitar blend mov*). I also used an extremely time-consuming method of manipulating the individual frames of a movie in PhotoShop, blurring parts, saturating others, before importing the clip back into After Effects for further work and rendering (e.g. *Sblue wall mov*, *Sfire door mov*). *Unsaturated back kitchen mov*, *saturated back kitchen mov* and



*back kitchen film mov* are examples of before, after, and too much handworking, respectively. Many of the QuickTime movies made during this period were eventually aggregated into my final works.<sup>216</sup>

Once I had gathered together an array of new material to use, I again turned my attention to the problem of structure. How might these clips be seen? I had established that I wanted the work off the screen and projected into a space (via a data projector connected to the computer). I visualized a wall or a corner. I was still very concerned with the idea of a collection of fragments of childhood memories that, if put together, might constitute a sense of place and I was still working from the premise of the viewer somehow triggering these fragments. Once more I experimented with Director (8). This time instead of using a sensor that was wired into a mouse I tried using a keyboard (Apple Extended II).<sup>217</sup> The reasoning behind this approach was that it enabled greater flexibility. By using the KeyDown command in the Lingo programming, I could extend the potential for interactivity, wiring different sensors into the various keys. When the sensors were triggered it would effectively mean that keys on the keyboard had been pressed and I could tell Director to act accordingly, using Lingo. Initially I did not wire the sensors in but programmed for them. Pressing different keys on the keyboard meant it was possible to jump forward to the next movie, back to the previous one, go to a separate 'memory-flash', section or pause the playback. (*Jumps 50% test1* is an early example of this. *Jumps 50% random* and *Jumps random 2* have more choice of memory-flashes using random programming to access them; they also allow a return to the previous movie.)<sup>218</sup> With these early tests, I established that some form of interactive triggering was possible using the separate movie clips I had made.

I was still plagued by flashes that happened between the clips and a pause as the movie was loaded into memory. To facilitate a smoother transition

<sup>216</sup> I should emphasize that the process of filming, making and further refining the clips continued throughout the project.

<sup>217</sup> I had also investigated the possibility of using an ADB I/O unit. Designed especially for the Macintosh it plugged into an ADB port allowing for sensors to be connected and working with Director. An I-Cube with a MIDI interface was another possibility but I decided I did not want to tackle a new programming language at that point.

<sup>218</sup> These are in the folder, *Director tests*, in the CD-ROM, *The Second Phase*, that accompanies this exegesis.

between them, I cut and pasted the individual clips together (in QuickTime). The result was one longer movie that consisted of the smaller fragments. I then imported this movie into the program SoundEdit 16 and added a Cue Point to the start of each of these smaller elements before bringing it back into Director. Using Lingo and the Cue Points I was able to send the playback head to the various parts of my longer movie thereby solving both problems (*Cue points* is an early example, while *Adding more 2* attempts a more diverse approach).<sup>219</sup> This became the strategy I employed in my later work although I further refined my use of the Cue Points by also adding them to the end of each small section and putting more black space between the segments.

At this point, I also started working more seriously with sound. From the start of the project I had been sampling miscellaneous recordings, collating the sound elements from my video shoots, and assembling material from earlier family gatherings. These were all managed in SoundEdit 16 resulting in an extensive library from which to draw. Here too I kept manipulation to a minimum, relying more on volume, editing and, later, more directional microphones for effect, although I did experiment with pitch, (i.e. slowing or speeding) and obtained good results. I discovered I could layer sound in Director by using an initial play-list then programming other sound files to play in one of six channels when a memory clip was triggered (*Adding more 2*). This, too, became a device put to good effect in later work.

These initial experiments laid the foundation for three of my final pieces. The investigation into Cue Points and layered sound culminated in *Hall Walk*. My original idea, of a collection of fragments enabling a sense of place, found fruition in *Anna's House*; and *Room* evolved from early footage shot and rendered at this time. Although I had established the significance of the memory image (and found the means to generate this) I faced two further challenges. Firstly, I had not resolved just how I was going to bring the work off the screen and install it in a given space. And secondly, what was the interactivity doing beyond proving that it was

<sup>219</sup> These are in the folder, *Director tests*, in the CD-ROM, *The Second Phase*, that accompanies this exegesis.

conceivable? Could it play a role as a trigger as I had thought at first? Did it add anything to the experience of the work?

### ***The Third Phase***

Although the process of filming and producing the memory clips continued, I needed to concentrate also on how they might be orchestrated within a gallery situation. This was an issue that I had given thought to, but not physically attempted, beyond some casual wall projections. I had imagined a number of scenarios. The simplest was a single projection point (perhaps with different film clips following one after another) animated by the movement of a spectator entering a room (as in the manner of *Motion Interactive*). Another variation contained a darkened space with a large projection on one wall (e.g. my *Light Swing Movie*) with figures appearing and disappearing in response to the viewer. A further probability was the use of multiple projections set in different areas and designed to be triggered as a person approached or passed; effectively animating the room. Additionally I had considered the possibility of positioning objects, either on a wall or within a space that if approached would instigate a video clip. But I abandoned this line of thought because of the extremely subjective nature of memory cues. Tying a memory to one particular thing seemed too restrictive. But did the onlooker need to trigger the movies? Why should there be any interaction?

I began to question my presupposition that a wall (or corner) was the required setting for the work. Why? I had assumed this because I had been thinking in terms of actual spaces being inhabited by memory fragments and possibly because of my own exhibition history. A memory might indeed activate a space in this manner but it might equally animate other surfaces or exist in a void. I tried projecting onto dark cloth but the intense blackness appeared to smother the imagery, it lost its quality of light.





Fig.60. *Projected image on interfacing.*

After fashioning a small frame that could be hung in space, I investigated further materials such as Interfacing, Glassine, Japanese paper, Tracing paper, Drafting film and Detail paper, with no outstanding results. Sailcloth was also suggested as a viable option, especially for back projections. I tested three different types, a cotton canvas, polyfabric and a waterproof nylon.<sup>220</sup> Although all diffused the glare well enough, the canvas screen relegated the image to second place. I was too aware of the material and its imperfections. The plastic-looking polyfabric yielded a similar effect with its glossy surface. I needed a covering that would allow the image to exist without distraction and the nylon sailcloth proved a suitable medium. In addition to this I discovered a possible solution to a problem that had been eluding me.

<sup>220</sup> Some of these experiments have been recorded on Mini DV tape (*Installations One*) and are available for viewing.

If I used two layers of sailcloth, the projected image was only sharp where the surfaces touched, otherwise it dissolved in a blur. This was something I had been trying to achieve with little success by hand-manipulating individual frames.



Fig.61. *Projected image on waterproof nylon sailcloth.*



Fig.62. *Projected image on two layers of sailcloth.*

These experiments were largely inconsequential beyond alerting me to the potential of nylon sailcloth as a medium for projecting on or through. Their importance came from the method of working in a given space. A number of issues emerged. Firstly, the light from the data projector lens could be an aggravating factor not just associated with back projections. Secondly, I would need to position the projectors to avoid shadows unless I specifically wanted them in the work. Because of this I reached the decision

that the projectors, if at all possible, needed to be ceiling mounted to eliminate shadows and reduce the glare from the data projector. I also experimented with masking the actual lens itself; as a potential method for further reducing glare but, primarily, as a way of eliminating everything around the image.<sup>221</sup> Even working at full screen, I was left with an annoying area of grey light surrounding the projection. It was an enigma not encountered on the computer screen but rather seemed to be associated with the projectors themselves.

The prospect of suspending an image was tantalizing. I started to see this as a discreet object in a space, opening a potential to work with other materials. Transmitting the work through a small two-inch LCD color television was one option investigated. Additionally, I looked into LCD screens but found the cost prohibitive and conducted further experiments projecting onto glass. My interest in using water as a vehicle reemerged. What would this do to the image? I was discovering the means but now needed to separate and shape these elements into distinct environments.

## Hall Walk



Fig.63. Ruth Frost, view of interactive installation Hall Walk, 2002. Digital video, projector, sound motion sensor, computer and modified keyboard.

*Hall Walk* is a composite piece consisting of a video loop of a walk down a hallway and thirty-seven short video clips/fragments, as well as thirty-three

<sup>221</sup> I have also used black Contact on the mirror I use to reflect the image.



sound files. The hall loop plays continuously. Its timing is slow, to exaggerate its dream-like quality and to suggest the impossibility of ever reaching the other end. The smaller, individual video clips have varying speeds and effects. They represent memories, fragments of thoughts and feelings, that break through and rupture the hall walk. I was much influenced by Proust's descriptions of involuntary memory – the superimposing of one scene on another.<sup>222</sup> The size of the piece needed to be large enough to invite the viewer into the space – down the hallway.<sup>223</sup> A motion sensor positioned at optimum viewing distance triggers the sound and smaller clips.<sup>224</sup> Only subtle movements, reminiscent perhaps of the body preparing to walk down the hallway, are needed.<sup>225</sup> The viewer controls the extent of the flashbacks. Ideally, the piece is designed for a single person who can engage/orchestrate the fragments at will. These are randomly programmed to enhance the elusive and somewhat arbitrary nature of such encounters with the past. The feel of the work can alter depending on which memories are accessed more frequently.

The sound and imagery used in the piece can be read on a number of levels. On the one hand, there is the association with memories of a much used and worn space, and the echoes of past activities and occupants that hang in the air, or settle in corners like a fine dust. It is this quality that I have tried to enhance with my use of muted sound recordings from the rough and tumble of family life and by using a low camera angle for filming. I imagined the number of times that trip down the hall might have been taken, the expectations, the games, the door flung open. On the other hand the door in my hallway remains closed, and any sense of an outside is banished in the wash of light through the glass. Moth-like, one is drawn towards its radiance only to encounter its solid, impenetrability, condemning the wanderer of this corridor to remain forever trapped. The footage of the hallway also contains residues, for me, of a faint impression from my childhood not fully visualized or understood, of a fugitive mixture of high

<sup>222</sup> Proust, *Remembrance of Things Past*, Vol. 2, trans. Moncrieff and Mayor, p. 1003.

<sup>223</sup> I have tried smaller projections but the spatial illusion remains important.

<sup>224</sup> The sensor I have used is a Paramount sensor, usually positioned above doorways. I chose this because of its narrow beam of influence and because it seems to prefer a 'back and forth' movement to trigger it (as opposed to a sensor that detects any type of movement in a wide space).

<sup>225</sup> Proust talked of the body's ability to store memories. Proust, *Remembrance of Things Past*, Vol. 1, trans. C.K. Scott Moncrieff, p. 5.



walls, light and entrapment. I have further tried to enhance this quality of the work in the small fragments of video footage. The memory remnants themselves have undergone many changes. I found that short, almost incomplete clips worked best, precisely because of their fragmentary nature. They suggest rather than describe. Seen in combination, they almost tell a story but it remains elusive – felt rather than actual.



Fig.64. Ruth Frost, still from the installation *Hall Walk*, 2002.

*Hall Walk* evolved from my experiments with Cue Points and layered sound. At this stage, I was still working from the premise of evoking a perception of a specific place using a series of fragments (*Adding more 2*). However my concern shifted after re-evaluating footage filmed in the hallway of my chosen site. Buoyed by my original ideas of coexisting elements within a particular space, I imagined dissolving the gallery wall into the hallway itself: animating the space with the imagery and thereby creating a means for the viewer to enter, literally catapulting them into it. The memory flashes or fragments would emanate from the hall. (*Hall Loop 2* is an early version with three ‘flashes’ and similar to my primitive *Cue points*.) By this stage most of my original planning for interactivity seemed irrelevant. I kept the programming for two sensors; one would initiate the memory flashes and the other would pause the imagery. In *Hall Loop 4* I started slowing the hall loop to differentiate between it and the memory flashes.<sup>226</sup> Subsequent versions (*Hall Loop 6* and *Hall Loop 7*) all experimented with

<sup>226</sup> Some of these early versions can be found in the CD-ROM, *The Third Phase CDI*, that accompanies this exegesis as well as the individual movies that make up the final piece. Additionally, early experiments with installation can be found on the Mini DV tape (*Installations One*).

different variations. I added more and more memory clips and sound layers, experimenting with the feelings they evoked. *Hall loop 8* saw me discard the sensor that initiated the pause command. I had been increasingly questioning my use of interactivity and concluded that this sensor merely satisfied my desire for a still image. My reasoning had moved from seeing the process almost as an end in itself to one possible strategy among many others. I needed to return to my original aim, which was to evoke the experience of remembering. Interaction could only play a part as far as it might serve this process, as a tool – a way of making the work dynamic. After working with the piece in the gallery, I confirmed the idea of the fragments being associated in some way with the hallway rather than flitting about the entire house and in *Hall Loop 9* and *Hall Loop 10* I initiated masking for all the flashes.

The video clips are crafted in After Effects and pasted together in QuickTime. I used SoundEdit 16 for the audio, and the individual elements were brought together in the program Macromedia Director 8 to allow for interactive scripting and random programming.

## Room



Fig. 65. Ruth Frost, *view of installation Room*, 2002. Digital video, portable television, video player and black acrylic frame, 27x27cm.

*Room* consists of a single, looped movie played through a small, framed, portable television. This is a more subtle, lyrical piece. The main concern

was to elicit an impression of how our memories may shift and vacillate; of layers of time; of fragments becoming confused, muddled. It was motivated by my discovery of an overgrown secluded chamber, once used as a child's bedroom or playroom, now largely abandoned. Prompted initially by a single clip, I returned many times to film, captivated by the changing conditions and light. I imagined the countless recollections possible in such a place. Hidden, almost forgotten now, what would happen to the tangle of impressions that were once a lived-in space? Was there one scene that would dominate? How would these remnants play themselves out?



Fig.66. Ruth Frost, still from the installation *Room*, 2002.

In a manner similar to the hall walk clip, I used a radiating light source to lead the viewer forward into the room. One is drawn towards it, perhaps desiring to see beyond, but, as with many memories, there is a threshold beyond which we cannot pass. Brightness can obscure detail as effectively as darkness and we are turned away, towards a more interior reminiscence. The quality of light is an important aspect in all my work. Not only does it have strong emotive power but often it is that very characteristic that is preserved (in my memories at least).

I originally conceived the work as a simple collation of QuickTime movies designed to play continuously, one after another. Inspired by a line from Bachelard I conjured an apparition that floated in an expanse of darkness.<sup>227</sup> I imagined an image suspended in space, and experimented accordingly. My shift in scale to the miniature television screen signalled a

<sup>227</sup> 'Memories are motionless, and the more securely they are fixed in space, the sounder they are.' Bachelard, *The Poetics of Space*, p. 9.



transformation from an awareness of recollection as an external sensation towards a more internal illusion.



Fig.67. Ruth Frost, view of an early installation set-up of *Room*, 2002.

With the movies themselves I tried a number of approaches. At first I had thought of quite separate incidents and shaped the footage accordingly (*Bedroom piece*).<sup>228</sup> However, as my ideas changed to include a sense of time, I again turned to layering as a technique. Initially I applied old snapshots (i.e. *draft long snapshot flash movie*, *draft snake movie*) to the footage but was faced once more with the dilemma of accomplishing the production of something that looked like photographs of memories, rather than an evocation of actual memories of place and people. The layering worked best when I succeeded in superimposing a sense of another space or era into the fragments (*Bedroom piece version 2*).

I continued with *Director* to allow for a random, rather than sequential presentation of the individual clips but I also assumed the use of an interactive component. I was experimenting with quiet, with cultivating a sense of tranquility; allowing time and distance for the memories to play themselves out. After working with *Hall Walk*, which had a more dynamic feel, I wanted a sense of passive acceptance rather than an active seeking; anticipating the act of remembering as a state of almost hypnotic concentrated stillness, with movement inhibiting an ability to encounter memory images. I again used a motion sensor wired to a mouse but this time programmed the piece to return to the start of a movie if action was

<sup>228</sup> All material mentioned here can be found on the CD-ROM *The Third Phase CD2*, that accompanies this exegesis.



detected.<sup>229</sup> The only way of enabling a continual stream of images was to remain absolutely inert. Any loss of concentration or gesture would send you ricocheting back to the beginning. This was unfortunately perfect in theory but woeful in practice. Being continually returned to the beginning of a clip did nothing to precipitate stillness as I had hoped. I found the effect of the sensor irritating beyond belief, totally spoiling the ambience of the piece, and I subsequently removed it. The concentrated state of mind I was attempting to invoke was a product of an engagement with the imagery, rather than a forced awareness of every gesture.

Additionally, as I continued to work with the piece, I questioned the experience of a number of essentially similar video clips playing one after the other. Although some of them were indeed layered and blended with other imagery, the effect did not go far enough in evoking the sense of confused impressions I desired. I decided to abandon this approach and instead layered my footage together in the one clip.<sup>230</sup> I have not included sound with this piece. Silence can be as eloquent, indeed as loud as actual noise. I was aware of the residual sound wash from other works in the gallery and hoped to invoke the viewer's own auditory memories. The work is produced in After Effects.

### Anna's House

*Anna's House* evolved from my former ideas of fragments, evoking a sense of place, and consists of forty-five small clips that are randomly accessed. I imagined Bachelard's oneiric house. Long forgotten in its entirety, the only access available now is through a collection of intimate moments; buried remnants from another era. What sort of imaginary dwelling would be constructed from these? With its first modest beginning (*Anna's House1*) I simply gathered together a collection of previous material but by *Anna's House3*, I had managed to create a distinct character, and separate it from other pieces. In this version I simply allowed the movies to play, one after the other, in a predetermined order. However, in *Anna's House4* I again added a random factor to intensify the capricious nature of these

<sup>229</sup> This time I used a standard motion detector. For a sense of what this was like try clicking the mouse while viewing *Bedroom piece version 2*.

<sup>230</sup> For some of the earlier versions of the final clip see the folder, *Early Versions of Room*, in the CD-ROM, *The Third Phase CD2*.

encounters. With *Anna's House*<sup>5</sup>, I masked the imagery to fit into the bowl and added further components. Here too, the imagery is quieter, more introspective. I have endeavored to elicit an overall impression through small glimpses.



Fig.68. Ruth Frost, view of installation *Anna's House*, 2002. Digital video, projector, computer, concrete bowl and white colored water. Bowl dimensions 60x60cm.

I had been excited by the possibility of water for some time, wondering how an image might look projected onto it.<sup>231</sup> Would it change in any way? I considered the effect of ripples. The recollection of memories is often associated with depth, with rising images. The notion of a liquid surface intrigued me; I visualized an undulating, gliding succession of apparitions. It also interested me as a vehicle for contemplation. One thinks of casual daydreaming whilst sitting by water; its calming powers stilling the mind and allowing retrospection. Additionally it is often seen as a medium that enables further insight or even prophecy.

I had originally wanted a much larger appliance to hold my liquid images (even imagining building an actual pool). Eventually I chose something simple and unassuming. Again it was the experience of the images that was important, rather than the experience of a vessel in a space. I was surprised

<sup>231</sup> Lynette Wallworth's *Hold Vessel #2* is apparently projected onto water but I have not seen this piece. Another work worth mentioning is Chris Rowland's *Fishion* (2000), which features projected imagery onto a shallow circular pool reminiscent of a well. This is an interactive artwork with the imagery changing according to movement from the spectators as well as changing light conditions. My only experience of the work is through web cam pictures. See <http://www.mcdiascot.org/artlife/> (last referenced 26/03/02).

with my first experiments. At first I kept the water clear. Because of the light color of the bowl the pictures glowed, appearing to radiate light as they flashed and changed. This was a powerful effect I had not anticipated. I



Fig.69. Ruth Frost, view of installation *Anna's House*, 2002, with the interior of the bowl darkened.



Fig.70. Ruth Frost, view of installation *Anna's House*, 2002, with oil on the water.

was equally surprised that the images did not sit on the surface of the water as I had thought they would, but seemed to sit on the bottom of the container.<sup>232</sup> I tried blacking the interior. It gave a sense of infinite depth but I lost the gentle radiance, which I now wanted to keep. As a further experiment I tried oil on the water. This did create a surface for the image to sit on but because of the separation it was too distracting. Finally, I tried

<sup>232</sup> Some of these early experiments can be found on the Mini DV tape (*Installations One*). The various versions of *Anna's House* can be found on the CD-ROM, *The Third Phase CD2*.

whitening the water and obtained the results I wanted. It gave the image a more faded appearance, enabled it to sit on the surface and still retain the luminescence.

*Anna's House* was originally conceived with the idea of the individual movies looping, until the surface of the water was broken. The effect of someone putting his or her hand into the bowl would bring about the next image. To this end I experimented with an ultrasonic proximity detector. This sensor detected the nearness, for example, of a hand as it approached and could be similarly wired into a keyboard. If placed correctly near the water in the bowl, the effect was as if it had been triggered when the surface was broken. I also experimented with small laser sensors. There were problems with both types of sensors that I tried. The laser sensors were noticeable and the proximity detectors, although flat, small and unobtrusive, did emit a low noise.<sup>233</sup> These problems could have been overcome but, once again, as I worked with the piece in a gallery context, observing and talking to people about their experience, I realized that the interactivity would not work. Although some people actively desired to touch the water, most wanted only to look. I decided that having to initiate an action each time you wanted to change the imagery seemed to highlight that action as more important than the imagery. Again it was not the experience of remembering as I had come to understand it. Nor was it conducive to the sense of reverie I was attempting to induce – one that allowed the shift and play of imagery across the surface of the mind. I turned instead to a more intuitive programming that would randomly alter the flux of the imagery, keeping it fluid rather than fixed.

I have used sound in this piece to enhance the same sense of hypnotic contemplation. It is a single loop of cicadas and birdcalls that plays consistently in the background; reminiscent of lost summers and time for daydreaming. Again the movies were created in After Effects and brought together in Director to allow for random programming.

<sup>233</sup> In February 2002 I also attended a sensor workshop with Ken Gregory as part of Solar Circuit 2002 but it did not change my ideas concerning this piece.





Fig.71. Ruth Frost, view of installation Bell Jar, 2002. Digital video, projector, computer, bell jar, oval glass screen and Perspex stand.

The young girl dancing behind wallpaper is one of the few components of my early experiments at Narryna that I have retained, although the footage has since been re-filmed and re-worked. After showing the original piece at one of my first critiques, the similarities between this and the imagery evoked in a story, *The Yellow Wallpaper*, by Charlotte Gilman was pointed out.<sup>234</sup> I have since read this and do acknowledge the references however the horror suggested in Gilman's work is not present here. Instead, suggestive of a cherished instant in time, the child twirls endlessly, the moment intimately and forever connected to the faded flowers of another era.

This piece too has changed. I had originally contrived the blended effect using Director, combining layers of video footage and a photograph.<sup>235</sup> I was able to recreate this in After Effects and it now exists as a single looped QuickTime movie. I had also thought to project the piece onto glass and experimented accordingly.<sup>236</sup>

<sup>234</sup> Charlotte Perkins Gilman, *The Yellow Wallpaper and Other Stories*, edited with an introduction by Robert Shulman, Oxford: Oxford University Press, 1998, c.1995.

<sup>235</sup> See *Pressure Experiment* in the CD-ROM, *The First Phase CD1*.

<sup>236</sup> Some of these early experiments can be found on the Mini DV tape (*Installations One*).



Fig.72. *Early experiment projecting onto glass.*

However the intimacy of the moment seemed to call for something different. This was a small treasured remnant, sealed, existing in a vacuum. The bell jar seemed an appropriate solution and I shaped the movie to fit inside it.<sup>237</sup> I could also see no reason to add interactivity to the work although this again had been an early intention. Instead the notion of the figure replaying her shining moment again and again in splendid isolation was a far more poignant suggestion. Sound too, although considered and tried seemed to overstate the piece, with the silence seeming a far more provocative evocation.

The imagery used does not come from any specific memory of mine, although it is one of the few instances where I have referenced the observer perspective. Rather it stands in for the notion of a generic childhood – the child I once was.

<sup>237</sup> See the folder *Bell Jar*, in the CD-ROM, *The Third Phase CD2*, for versions of the movie.

## PART SIX

### CONCLUSION

In this project I have explored ways of visually evoking the **experience** of remembering, concerning myself with autobiographical, or to use Brewer's term, recollective memory rather than the broad generality of memory per se. The memories of childhood have primarily interested me over those of more recent events.

As I researched the experience of remembering, what became apparent was the primacy of the mental picture or memory image. Impressions and sensations such as thoughts, emotions, sounds, the touch or smell of something, might also be present, but it is the image that is fundamental to the personal or recollective memory. It is this that makes our recollections believable, puts us firmly there. Without it we might have a sense of knowing 'something'; perhaps we have a fact or someone else's story. It is the memory image that makes the moment our own, and consequently, it was the visual characteristics of this image that became the basis for my own investigation.

I formed a notion of remnants of experience through my inquiry into the process of remembering. Fragments of segmented events and impressions stored in different ways and locations are forever mutating, shifting, becoming lost and displaced, in an endless attempt to make sense.

Our recollection of these fragments, whether voluntary or involuntary, is reactive – a cue provokes and the mind reacts – although often with involuntary retrospection we are unaware or unable to determine the cause. I had originally assumed that the appearance of these images implied an interaction and that this occurred at the level of triggering a memory image. I had hoped to use this in evoking the experience of memory. What I found, however, is that the essence of this experience is the memory image and its power to absorb. Rather than a concentration on actions or objects, the engagement with the memory occurs in the way we make associations and attempt to interpret or place the memory in a context. We weave our

story. My choice of visual narrative fragments arose from an awareness that we always turn to narrative, however fragmented, to convey memory experiences.

*Hall Walk* was the first of the major works to be completed and is the only one to retain my original notion of interactivity. It is probably the most traditional in terms of size and its reactive fragments; I was influenced by a more Proustian encounter with memory, a visible hallucination. I feel that the strength of the work lies not only in this experiential nature but also in the extent and possible permutations of the memory flashes. *Anna's House* focused my increasing interest in recollection as a series of fragments imaginatively pieced together. Instead of engaging the viewer through external sensation, I attempted to evoke a more internal impression of contemplation, reinforced by the gentle flow of residual experience and repetitive sound. The direction of the work changed again with the simplicity of *Bell Jar* and *Room*. In these works, rather than offer an obvious array of segments to create from, I assumed the small remnant as presented would be sufficiently provocative to elicit a similar response, concentrating instead on objects that might intensify this encounter. The shift in scale from *Hall Walk* to *Room*, which was the last piece to be finalized (although I have discussed it before *Anna's House* and *Bell Jar*), also signals a shift from an understanding of recollection as an external sensation towards a more subjective, mutable and internalized vision.

My work hovers between photography, video installation and the extensive domain of memory as subject. My use of the image as an active spatial medium separates it from the still photograph.<sup>238</sup> My emphasis on the visual characteristics of the memory image, and the evocation of the experience of remembering, through fragmentation and random programming, separates me from the broader field of video installation or the more general representation of memory as such. Nevertheless it is here, in my concentrated focus on the aesthetic and sensual properties of the memory image, and in my desire to make work that directly evokes the experience of memory, that I have made my particular contribution.

<sup>238</sup> This is where I hope to concentrate my next body of work, which I envisage as a group of animated photo-objects.



## Appendices

### Appendix 1

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## Appendix 2

### ***Curriculum Vitae***

- 1984 Bachelor of Fine Art, Tasmanian School of Art.  
1987 Master of Fine Arts, Tasmanian School of Art, University of Tasmania.

### One Person Shows

- 1987 *Image Makers or Alchemists. The New Photography - Act One.* Contemporary Art Centre of South Australia.  
*Master of Fine Arts Submission.* Centre for the Arts Gallery, Hobart.
- 1988 *Untitled Works - 1986/87.* Roz MacAllan Gallery, Brisbane.  
*4x4.* Chameleon Contemporary Art Space, Hobart.  
*Untitled Works - 1987.* Australian Centre for Photography, Sydney.
- 1989 *Untitled Works - 1988/89.* Chameleon Contemporary Art Space, Hobart.  
*Untitled Works - 1988/89.* Contemporary Art Centre of South Australia.
- 1990 *Untitled Works - 1988/89.* George Paton Gallery, Melbourne.
- 1991 *Light and Lunatic Foliage.* Victorian Centre for Photography, Melbourne.
- 1993 *Syllables of Fear and Tenderness.* A.G.O.G Gallery, Canberra.
- 1995 *Safe House.* A.G.O.G Gallery, Canberra.

### Group Exhibitions

- 1982 *From the Inside Out - Aspects of Women's Art.* Crafts Council Gallery, Sydney.
- 1983 *Not a Picture Show.* Long Gallery, Hobart.
- 1984 *Working Life.* Long Gallery, Hobart.

- The Constructed Image*. Chameleon Contemporary Art Space, Hobart.
- 1985 *Three Tasmanian Photographers*. Australian Centre for Photography, Sydney.
- Three Women Photographers*. Queen Victoria Museum and Art Gallery, Launceston.
- Working Life*. Australian Centre for Photography, Sydney.
- 1987 *Photogenics: Works from the University Collection*. Fine Art Gallery, University of Tasmania, Hobart.
- Fabrications: Recent Contemporary Art from Tasmania*. Chameleon Contemporary Art Space, Hobart, George Paton Gallery, Melbourne.
- 1989 *Night, Nacht, Noir*. Chameleon Contemporary Art Space, Hobart.
- Drawn in Light*. Roz MacAllan Gallery, Brisbane.
- Tableaux Mourant*. Fine Art Gallery, University of Tasmania, Hobart.
- 1990 *Focus on the Body*. Canberra Contemporary Art Space, Canberra.
- Affinities*. Canberra School of Art Gallery, Canberra.
- Fragmentation and Fabrication: Recent Australian Photography*. Art Gallery of South Australia.
- 1991 *42 Degrees South*. Chameleon Contemporary Art Space, Hobart.
- Touring regional venues.
- 1992 *42 Degrees South, 175 Degrees East*, touring New Zealand venues.
- 1993 *Flowers, Herbs, Human Sweat and Animal Breath*. Long Gallery, Wollongong.
- 1994 *Playing with Fire*. Canberra School of Art Gallery, Canberra.
- 1995 *Chameleon: A Decade*. Long Gallery, Hobart.
- Smalls*. Stills Gallery, Sydney.
- 1996 *Digital Arts Festival*. Canberra School of Art Gallery, Canberra.
- Domestic Disturbances*. National Gallery of Victoria, Melbourne.

## Collections

Devonport Art Gallery.

University of Tasmania.

Queen Victoria Museum and Art Gallery.

Museum of Contemporary Art, Brisbane.

Art Gallery of South Australia.

Tasmanian Museum and Art Gallery.



## Appendix 3

### *List of Illustrations*

- Fig.1. Ruth Frost, *Untitled 1986/7*, silver gelatin photograph, 183x305cm.
- Fig.2. Ruth Frost, *Untitled 1988/89*, silver gelatin photograph, 213 x 91.5cm.
- Fig.3. Ruth Frost, *Light and Lunatic Foliage*, 1991, hand-colored silver gelatin photograph, 146 x 96cm.
- Fig.4. Ruth Frost, *Syllables of Fear and Tenderness*, 1993, hand-colored, liquid-light photographs, 57 x 49cm.
- Fig.5. Ruth Frost, *Untitled*, from the series *Childhood Memories – 95 Megabytes*, 1994/95, computer manipulated photographs on polished nickel silver, 12.6x11.9cm.
- Fig.6. Ruth Frost, *Untitled*, from the series *Safe House*, 1995, computer manipulated photographs on polished nickel silver, 12.6x11.9cm.
- Fig.7. Installation view of images from *Safe House*.
- Fig.8. Jacky Redgate, *Photographer Unknown #5, Chiswick 1953*, from the series *Photographer Unknown, A Portrait Chronicle of Photographs, England 1953-62* (1984), silver gelatin photograph, 76.2x50.8cm (framed).
- Fig.9. Jacky Redgate, *#2'0, Adelaide c. 1972*, from the series *Untitled Day*, 2000, C-type photograph, mat, custom-made wooden frames, 610x508x5cm (framed).
- Fig.10. Christian Boltanski, detail from *Album de photos de la famille D.*, 1939-1964 (Photo album of the family D., 1939-1964), 1971. One hundred and fifty black-and-white photographs in tin frames

with glass. Photographs 20 x 30 cm each. Collection of Michel and Liliane Durand-Dessert, Paris.

- Fig.11. Christian Boltanski, *Les Habits de François C* (The clothes of François C), 1972. Twenty-four black-and-white photographs in tin frames with glass. Photographs 22.5 x 30.5 cm each. Collection of Daniel Bosser and Michel Tournereau, Paris.
- Fig.12. Anne Ferran, *Untitled (baby's dress)*, 1998, silver gelatin photogram, 110 x 95cm.
- Fig.13. Anne Turyn, *Untitled*, 1983. From the series *Illustrated Memories*, chromogenic color print (ektacolor), 32.9 x 48.6cm. The Museum of Modern Art, New York, The Family of Man Fund.
- Fig.14. Anne Turyn, *5/10/1926 (Flashbulb Memories)*, 1986, Ektacolor print, 11x14inches.
- Fig.15. Ulrike Gabriel, installation view of *Memory*, 1999.
- Fig.16. Ulrike Gabriel, detail from *Memory*, 1999.
- Fig.17. Toni Dove, detail from *Artificial Changelings*, 1998, interactive laser disk and sound installation.
- Fig.18. Thecla Schiphorst, detail from *Bodymaps: artifacts of touch*, 1996, computer interactive sound and video installation.
- Fig.19. Graham Harwood, detail from *A Rehearsal of Memory* (1995).
- Fig.20. David Rokeby, in *Very Nervous System*, in the street in Potsdam.
- Fig.21. Nigel Helyer, *Ariel*, from *Caliban's Children*. Interactive sound-installation, laser cut acrylic and audio electronics.
- Fig.22. Jeffrey Shaw, *The Legible City*, 1989/92, Silicon Graphics computer, modified bicycle, video, projector, projection screen.

Dimensions variable. Collection of the Museum of Contemporary Art, ZKM, Karlsruhe.

- Fig.23. Tennessee Rice Dixon and Jim Gasperini, scene from *ScruTiny in the Great Round* 1995, interactive CD-ROM.
- Fig.24. Tennessee Rice Dixon and Jim Gasperini, scene from *ScruTiny in the Great Round* 1995, interactive CD-ROM.
- Fig.25. Tennessee Rice Dixon and Jim Gasperini, scene from *ScruTiny in the Great Round* 1995, interactive CD-ROM.
- Fig.26. Gary Hill, installation view of *Tall Ships*, 1992, video installation with modified monitors, projection lenses, computer-controlled laserdisc players and switching runner mats for interactive triggering.
- Fig.27. Gary Hill, detail from *Tall Ships*, 1992.
- Fig.28. Gary Hill, detail from *Tall Ships*, 1992.
- Fig.29. Bill Viola, scene from *The Passing*, 1991, videotape.
- Fig.30. Bill Viola, scenes from *The Passing*, 1991, videotape.
- Fig.31. Gary Hill, *I Believe It Is an Image in Light of the Other*, 1991-92. Mixed media installation. Seven channel video, modified TV tubes for projection, books and speaker.
- Fig.32. Gary Hill, *Inasmuch As It Is Always Already Taking Place*, 1990. Sixteen channel video/sound installation. Sixteen one-half inch to 21 inch B&W TV tubes positioned in horizontal inset in wall.
- Fig.33. Bill Viola, detail from *The Sleepers* (1992), video installation.
- Fig.34. Lynette Wallworth, detail from *Hold Vessel #1*, 2001, projections, digital video, collection Australian Centre for the Moving Image.

- Fig.35. Ruth Frost, scene from *Light Swing Movie*. Digital animation created in Adobe Premiere using still photographs.
- Fig.36. Ruth Frost, scene from *New Hall Movie*. Digital animation created in Adobe Premiere using still photographs.
- Fig.37. Ruth Frost, scene from *New 10 Movie*. Digital animation created in Adobe Premiere using still photographs.
- Fig.38. Ruth Frost, scene from *Hallrun Movie*. Digital animation created in Adobe Premiere using still photographs and video footage.
- Fig.39. Ruth Frost, scene from *Dancing Movie*. Digital animation created in Adobe Premiere using still photographs and video footage.
- Fig.40. Ruth Frost, hall scene from *Narryna Installation*. Interactive Director movie using video, animation and still photographs.
- Fig.41. Ruth Frost, stairway from *Narryna Installation*. Interactive Director movie using video, animation and still photographs.
- Fig.42. Ruth Frost, bedroom scene from *Narryna Installation*. Interactive Director movie using video, animation and still photographs.
- Fig.43. Ruth Frost, image from *Random Garage*. Interactive Director movie using still photographs.
- Fig.44. Ruth Frost, recreated scene from *Pressure Experiment*. Interactive Director movie using video and still photographs.
- Fig.45. Ruth Frost, scene from *Motion Interactive*. Interactive Director movie using video, animation and still photographs.
- Fig.46. Ruth Frost, scene from *Motion Interactive*. Interactive Director movie using video, animation and still photographs.



- Fig.47. Ruth Frost, scene from *Motion Interactive*. Interactive Director movie using video, animation and still photographs.
- Fig.48. Ruth Frost, still from *new curtain comp*. Created in Adobe After Effects.
- Fig.49. Ruth Frost, still from *early short walk mov*. Digital video crafted in Adobe After Effects.
- Fig.50. Ruth Frost, still from *early hall walk mov*. Digital video crafted in Adobe After Effects.
- Fig.51. Ruth Frost, still from *early slow no sign mov*. Digital video crafted in Adobe After Effects.
- Fig.52. Ruth Frost, still from *early red chair mov*. Digital video crafted in Adobe After Effects.
- Fig.53. Ruth Frost, still from *mem. flash1 mov*. Digital video crafted in Adobe After Effects.
- Fig.54. *David and Ruth with cat*. Silver gelatin photograph from the collection of my early childhood photographs.
- Fig.55. Ruth Frost, *Short mantel without masking*. Digital video crafted in Adobe After Effects.
- Fig.56. Ruth Frost, *Short mantel with masking*. Digital video crafted in Adobe After Effects.
- Fig.57. Ruth Frost, still from *pink hat mov*. Digital video crafted in Adobe After Effects.
- Fig.58. Ruth Frost, still from *unsaturated blue wall mov*. Digital video crafted in Adobe After Effects.

Fig.59. Ruth Frost, still from *saturated blue wall mov.* Digital video crafted in Adobe After Effects.

Fig.60. Projected image on Interfacing.

Fig.61. Projected image on waterproof nylon sailcloth.

Fig.62. Projected image on two layers of sailcloth.

Fig.63. Ruth Frost, view of interactive installation, *Hall Walk* (2002). Digital video, projector, sound, motion sensor, computer and modified keyboard, dimensions variable.

Fig.64. Ruth Frost, still from the installation *Hall Walk* (2002).

Fig.65. Ruth Frost, view of installation, *Room* (2002). Digital video, portable television, video player and black acrylic frame, 27x27cm.

Fig.66. Ruth Frost, still from the installation *Room* (2002).

Fig.67. Ruth Frost, view of an early installation set-up of *Room* (2002).

Fig.68. Ruth Frost, view of installation, *Anna's House* (2002). Digital video, projector, computer, concrete bowl and white colored water. Bowl dimensions 60x60cm.

Fig.69. Ruth Frost, view of installation *Anna's House* (2002) with the interior of the bowl darkened.

Fig.70. Ruth Frost, view of installation *Anna's House* (2002) with oil on the water.

Fig.71. Ruth Frost, view of installation *Bell Jar* (2002). Digital video, projector, computer, bell jar, oval glass screen and Perspex stand.

Fig.72. Early experiment projecting onto glass.

## Appendix 4

### ***Extract from Journal. Results of Compression Tests (July).***<sup>239</sup>

Experimenting with media Cleaner Pro for best compression results – I don't want to lose too much quality after seeing the uncompressed digital video footage.

#### QT CD-ROM Sorenson Hi-end

##### **Settings**

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 50% resolution, noise reduction.

Compress – Sorenson, millions of colors, 30 fps, keyframe every 150, 120 Kbytes/s, VBR, keyframes are natural 50, size 100.

Sorenson – High quality, normal speed.

Audio – IMA 4:1, 22 Kbytes/s, 16 bit mono at 44 kHz.

Alternate – Quality, 7.

This is OK but quite pixelated.

#### Ruth Sorenson hi-end

I tried a variation of this.

##### **Settings**

Output – QT movie, flatten/cross platform/fast start. **(Didn't compress header.)**

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, deinterlace(blend), noise reduction. **(Changed resolution to 100%.)**

Compress – Sorenson, millions of colors, 25 fps, keyframe every 150, 120 Kbytes/s, keyframes are natural 50, size 100. **(Changed fps, no VBR.)**

<sup>239</sup> These are notes I made for my own use.

Sorenson – High quality, normal speed.

Audio – IMA 4:1, 44 Kbytes/s, 16 bit stereo at 44 kHz. **(Changed to stereo at 44 Kbytes/s.)**

This produced very blocky, patchy results.

## Bill Sorenson

Tried using Bill's compression settings.

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Compress – Sorenson, millions of colors, 25 fps, all keyframes, 360 Kbytes/s. **(Much higher data rate and keyframes are different.)**

Audio – Qdesign music 2, 6.0 Kbytes/s, 16 bit stereo at 44.1 kHz, noise removal, noise gate, reverb. **(Different audio codec.)**

Begin/End – High quality first and last.

This also produced extremely blocky results – the footage was quite distorted.

## Suggested Wizard

Tried using the Cleaner Wizard suggestions but this also produced blocky results.

## New Ruth

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Deinterlace(blend), noise reduction. **(Image size unspecified.)**

Compress – Sorenson, millions of colors, 25 fps, keyframe every 75, 120 Kbytes/s, VBR. **(Halved the keyframe setting used in Sorrenson Hi end.**

**Using Variable Bitrate to assess the footage before compressing and lowered the data rate back to the recommended Sorenson Hi-end CD-**



### **ROM setting.)**

Audio – Qdesign music 2, 6.0 Kbytes/s, 16-bit stereo at 44.1 kHz, noise removal, noise gate. **(Kept this similar to Bill's setting.)**

Begin/End – High quality first and last.

Alternate – Quality 7.

At this setting with the image size unspecified, the movie (Kitchen Pan) size appears to be 360 x 288 pixels. (Double this and you get 720 x 576.)

The file size is 1.1 Mbytes and the average data rate is 96.8 Kbytes/s.

### **New Ruth 2**

#### **Settings**

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, deinterlace(blend), noise reduction. **(Changed resolution back to 100%.)**

Compress – Sorenson, millions of colors, 25 fps, keyframe every 75, 120 Kbytes/s, VBR. **(The data rate is still on the recommended Sorenson Hi-end CD-ROM setting.)**

Sorenson – Highest Quality.

Audio – Qdesign music 2, 6.0 Kbytes/s, 16 bit stereo at 44.1 kHz, noise removal, noise gate. **(Same as New Ruth.)**

Begin/End – High quality first and last. **(Same as New Ruth.)**

Alternate – Quality 7. **(Same as New Ruth.)**

The only difference between the settings is that I changed the resolution back to 100% and made sure that Sorenson quality was set at highest. At this setting, New Ruth 2, the movie (Kitchen Pan) size is 640 x 480 pixels, the data size is 1.1 Mbytes and the data rate is 98.5 Kbytes/s. The quality in both movies is OK, although darker and more contrasty.

**•NOTE Sorenson will make things more contrasty and a lot darker – perhaps I can compensate in After Effects.**

Will now try a short version of Dream mov on New Ruth 2 settings – the Short Dream movie is 15 seconds long. All subsequent tests use this same short segment

At this setting, New Ruth 2, the data size is 1.8 Mbytes, the data rate is 124.2 Kbytes/s and the size is 640 x 480 pixels. The quality is quite good, there is less 'pixel dancing' than with the original compressed Dream mov (however the original was compressed using the Sorenson CD-ROM setting). The problem is that the footage stutters – it gets lines through it. I'll try without the deinterlace option checked and will call this New Ruth 3.

### New Ruth 3

#### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction. **(Deinterlace option not checked.)**

Compress – Sorenson, millions of colors, 25 fps, keyframe every 75, 120 Kbytes/s video, VBR.

Sorenson – Highest Quality.

Audio – Qdesign music 2, 6.0 Kbytes/s, 16 bit stereo at 44.1 kHz, noise removal, noise gate.

Begin/End – High quality first and last.

Alternate – Quality 7.

I can't see that this made much difference. The footage still stutters and has areas of blocky pixelation. I will try without the compress movie header option checked and call this New Ruth 4.

### New Ruth 4

#### Settings

Output – QT movie, flatten/cross platform/fast start. **(Compress movie header option not checked.)**

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction. **(Deinterlace option still not checked.)**

Compress – Sorenson, millions of colors, 25 fps, keyframe every 75, 120 Kbytes/s video, VBR.

Sorenson – Highest Quality.

Audio – Qdesign music 2, 6.0 Kbytes/s, 16 bit stereo at 44.1 kHz, noise removal, noise gate.

Begin/End – High quality first and last.

Alternate – Quality 7.

The only difference is that the compress movie header option was not checked. The data size is still 1.8 Mbytes and the data rate is 123.8 Kbytes/s. The footage is still pixelated and still stutters. I will try a new data rate worked out using the formula suggested by Sorenson and will call this New Ruth 5.

## New Ruth 5

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction. **(Deinterlace option still not checked.)**

Compress – Sorenson, millions of colors, 25 fps, keyframe every 75, 220 Kbytes/s video, VBR. **(Changed the data rate to 200 Kbytes/s.)**

Sorenson – Highest Quality.

Audio – Q design music 2, 6.0 Kbytes/s, 16-bit stereo at 44.1 kHz, noise removal, noise gate.

Begin/End – High quality first and last.

Alternate – Quality 7.

The footage still stutters but is less pixelated and the quality does look better. The movie size is 640 x 480 pixels, the file size is 3.3 Mbytes and the data rate is 226.3 Kbytes/s.

## New Ruth 6

I want to try and reduce the contrast and will try adjusting this to minus 10. I will change the Sorenson settings too. The automatic keyframes will be set at 100 (the highest setting) and the data rate tracking at 40. All other settings will remain the same as New Ruth 5.



## Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction. **(Deinterlace option still not checked.)**

Adjust – Contrast –10.

Compress – Sorenson, millions of colors, 25 fps, keyframe every 75, 220 Kbytes/s video, VBR.

Sorenson – Highest Quality (normal speed), **also** automatic keyframes at 100 and data rate tracking at 40.

Audio – Q design music 2, 6.0 Kbytes/s, 16-bit stereo at 44.1 kHz, noise removal, noise gate.

Begin/End – High quality first and last.

Alternate – Quality 7.

This has given the best results so far. I still get the ‘stutters’ but the pixelated effect is far less. The file size is 3.3 Mbytes and the data rate is 226.1 Kbytes/s

Talked with Bill about compression and he suggested that since I’m not compressing for CD-ROM that I try not limiting the data rate and not setting keyframes. He also suggested to keep the image size at 640 x 480 but with 50% resolution as it could sometimes yield better results. He also suggested I try Jpeg and motion Jpeg as options.

## New Ruth 7

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 50% resolution, noise reduction. **(Changed to 50% resolution.)**

Adjust – Contrast –10.

Compress – Sorenson, millions of colors, spatial quality 100, 25 fps, keyframes none (natural), no limit of video data rate. **(No keyframes and no limit to video data rate.)**



Sorenson – Highest Quality, (normal speed) and all other options off.  
Audio – Q design music 2, 6.0 Kbytes/s, 16-bit stereo at 44.1 kHz, noise removal, noise gate.  
Begin/End – High quality first and last.  
Alternate – Quality 10. **(Changed from 7.)**

The file size is 4.1 Mbytes, the data rate is 278.6 Kbytes/s and the movie size is 320 x 240 pixels. I quite liked the result (no stutter) it is probably the best so far but given that I want my Director pieces to be full screen – that is 640 x 480 pixels – can I use this in Director?

## New Ruth 8

I will try the same settings but storing them at 100% resolution.

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction. **(Changed to 100% resolution.)**

Adjust – Contrast -10.

Compress – Sorenson, millions of colors, spatial quality 100, 25 fps, keyframes none (natural), no limit of video data rate.

Sorenson – Highest Quality (normal speed), and all other options off.

Audio – Q design music 2, 6.0 Kbytes/s, 16-bit stereo at 44.1 kHz, noise removal, noise gate.

Begin/End – High quality first and last.

Alternate – Quality 10.

I don't think this one is an option. The footage appears to stutter quite badly although the pixelation is good. However my short segment is 17 Mbytes – given that I'm still getting the stuttering as well as jerky playback I'm not impressed. File size is 17.1 Mbytes, data rate 1.1 Mbytes/s.

## New Ruth 9

This time I will try no keyframes and 100% spatial quality but I'll limit the data rate to 380 Kbytes/s.

## Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction.

Adjust – Contrast –10.

Compress – Sorenson, millions of colors, spatial quality 100, 25 fps, keyframes none (natural), 380 Kbytes/s video, data rate tracking 100 (highest quality). **(Limited the data rate again.)**

Sorenson – Highest Quality (normal speed), automatic keyframes at 100 and data rate tracking at 100.

Audio – Q design music 2, 6.0 Kbytes/s, 16-bit stereo at 44.1 kHz, noise removal, noise gate.

Begin/End – High quality first and last.

Alternate – Quality 10.

This looks good. The file size is 5.6 Mbytes and the data rate is 384 Kbytes/s. The footage still stutters but the file size is manageable and the pixelation is minimal.

## ***Compressing in Adobe After Effects***

### Jpeg motion A and B

Now trying rendering the same short movie in **Adobe After Effects** using **Jpeg motion A and B**. This is definitely not an option. The file size is 108 Mbytes (for 15 sec!), therefore extremely jerky playback and the footage is interlaced with black lines. The data rate is 7.1 Mbytes/s.

### Animation at Best Quality

I also tried the After Effects default which is Animation at Best Quality. This yields beautiful results but the file size is 424 Mbytes and the data rate is 28 Mbytes/s giving extremely jerky playback.

### **Animation at Least Quality**

This setting is not an option. I still have a large file size, 84 Mbytes, and the data rate is 5 Mbytes/s. Worse, the image is covered with lines and the playback is jerky.

### **Photo Jpeg**

This is not an option either. The file size is too large – 109.7 Mbytes and the data rate is 7.2 Mbytes/s. It does have a nice visual quality but the playback is jerky.

### ***Conclusions so far***

- The motion Jpeg's are not an option.
- It appears that if the whole movie is over 17 Mbytes in size it plays with a jerky motion. I also think this has something to do with the data rate – anything over 1 Mbytes/s is too high I think.
- So far New Ruth 9 – limiting the data rate to 380 Kbytes/s with no keyframes and data rate tracking set to highest quality – yields best results.
- I'm still quite pleased with New Ruth 6 settings (220 Kbytes/s and using VBR) if I need to reduce the size of the movies.
- New Ruth 7 – at half size(50% resolution) also works well if I can manage to get this to work in Director.
- For compression it appears that the settings in After Effects are not adequate. I do have Sorenson and Cinepac as options here but it appears to be better to output movies from After Effects as full DV movies then import them into Media Cleaner Pro for more advanced controls. I have reached my conclusions with Sorenson but I need to try Cinepac as well.

### ***Back to Media Cleaner Pro***

When I went through the Wizard settings in Media Cleaner it used Sorenson Compression but I should try compressing with Cinepac as well. Will try a high quality Cinepac setting.

## Ruth Cinepac

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction.

Compress – Cinepac, millions of colors, spatial quality 100, temporal quality 100, 25 fps, keyframes none (natural), video data rate 380 Kbytes/s.

Audio – Not an issue.

Begin/End – High quality first and last.

Alternate – Quality 10.

This quality is terrible – even more pixelated than with Sorenson, and that was at high quality settings. The file size is 5 Mbytes and the data rate is 344 Kbytes/s

I will try not limiting the data rate, but otherwise will keep the settings the same.

## Ruth Cinepac 2

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction.

Compress – Cinepac, millions of colors, spatial quality 100, temporal quality 100, 25 fps, keyframes none (natural), no limit on video data rate. (This is the only change.)

Audio – Not an issue.

Begin/End – High quality first and last.

Alternate – Quality 10.

This quality is quite nice. The data rate is 1.1 Mbytes/s and the file size is 16 Mbytes. The quality is about the same as new Ruth 6 or 7 with Sorenson



video. I do get stray pixels flying about which I didn't get with Sorenson BUT the stutter has gone. The large file size and data rate could be a problem though. I'll also try Motion Jpeg in Media Cleaner Pro.

### Apple Motion Jpeg A (MC Jpeg A mov)

#### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, deinterlace, noise reduction.

Compress – Apple Motion Jpeg A, millions of colors, 25 fps, VBR, limit data rate to 360 Kbytes/s.

Audio – Not relevant.

Begin/End – High quality first and last.

Alternate – Quality 10.

The quality here is **terrible** – blocky and with black lines on sharp edges.

The file size is 5.7 Mbytes and the data rate is 388 Kbytes/s.

I'll try this again but not limit the data rate.

### MC2 Jpeg A (MC2 Motion Jpeg A)

#### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, deinterlace, noise reduction.

Compress – Apple Motion Jpeg A, millions of colors, 25 fps, no video data rate set.

Audio – not relevant.

Begin/End – High quality first and last.

Alternate – Quality 10.

This is still not an option. The file size is 69.8 Mbytes and the data rate is

4.6 Mbytes. The quality is still poor with black bands on the edge of things and jerky playback.

## MC (Apple) Animate

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction.

Compress – Apple animation, millions of colors, Quality balance – 0, 100, 25 fps, no keyframes, Video data rate VBR – 500 Kbytes/s.

Begin/End – High quality first and last.

Alternate – Quality 10.

This is not an option. The quality is poor with a scattered pixel effect. The file size is 35 Mbytes and the data rate is 2.3 Mbytes/s.

I've decided to go with Sorenson video compression – it does seem to give the best results. I will try one more attempt to mix the results.

## New Ruth 10

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 100% resolution, noise reduction.

Adjust – Contrast –10.

Compress – Sorenson, millions of colors, 25 fps, keyframes none (natural), Video Data Rate – VBR, limit to 220 Kbytes/s.

Sorenson – Highest Quality, normal speed, automatic keyframes at 100.

Audio – Ima - 4:1, 44.100 kHz, 16 bit stereo.

Begin/End – High quality first and last.

Alternate – Quality 10.

I am trying this because all my reading suggests using VBR to combat

blocky pixels – also by limiting the data rate and changing the audio compression I'm attempting not to overstep the CPU capabilities of the computer. There was some suggestion that the Q design compression clashed with Sorenson compression. The actual suggestion is approx. 170 kBytes/s, however I've increased this to 220 which is approx. the formula data rate. The next step will be to see what works in Director 8. Can 50% resolution movies be used in other than 'direct to stage' option?

### **Results**

The quality is quite nice but I still get the stutter when I play back. The file size is 3.3 Mbytes and the data rate is 225.9 Kbytes/s.

### ***Note on the Stutter***

Movies that stutter played at normal size 640 x 480 **DO NOT** do so when played at half size.

**Movies that are cleaned at 50% resolution do not have the stutter** – only those at 100% resolution.

### **New Ruth 11**

After discussion with Robin – decided to go back to basic Sorenson Hi end CD-ROM settings with a few changes. I changed the frame rate to 12 fps, put the data rate at 380, increased Sorenson's Data Tracking and Automatic Keyframes and used VBR. Otherwise I kept everything the same. The results are good!!! I need to deinterlace though.

#### **Settings**

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 50% resolution, deinterlace (blend), noise reduction (flat field).

Adjust – Contrast –10.

Compress - Sorenson, millions of colors, 12 fps, keyframe every 150 (everything else at 100), Video Data Rate 380 Kbytes/s, VBR.

Sorenson – Automatic keyframes at 100.

Audio – Ima - 4:1, 44.100 kHz, 16 bit stereo.

Begin/End – High quality first and last.

Alternate – Quality 7.

This really is the best so far – there is no apparent stutter and minimal pixelation. The data rate is 451 Kbytes/s.

## New Ruth 12

### Settings

Output – QT movie, flatten/cross platform/fast start. Compress movie header.

Tracks – Process video and audio.

Image – Manual crop, display at 640 x 480 at 50% resolution, deinterlace (blend), noise reduction (flat field).

Adjust – Contrast –10.

Compress – Sorenson, millions of colors, 12 fps, keyframe every 150 (everything else at 100), Video Data Rate 120 Kbytes/s, VBR.

Sorenson – Automatic keyframes at 100.

Audio – Ima - 4:1, 44.100 kHz, 16 bit stereo.

Begin/End – High quality first and last.

Alternate – Quality 7.

Tried this in order to reduce the file size and data rate so that I can play movies in Director. This is what I'll been using.

## ***Notes on Playing Movies in Director***

I can get a movie to play through (without 'wait for cue point') with only one frame selected by placing a 'go to the frame' script in the frame channel. This will play whether the movie has Direct to Stage selected or not.

Otherwise to play a movie without Direct to Stage selected I need to use the exact no. of frames the movie takes up in the score channel – this is too bulky.

A movie that has been 'cleaned' at 50% resolution in Media Cleaner Pro – even if it displays OK at 640 x 480 in Quick Time, does not look good in



Director unless Direct to Stage is selected. It is too pixelated.

Movies play more smoothly when Direct to Stage is selected. At 640 x 480 they are terribly jerky unless Direct to Stage is selected.

## Appendix 5

### ***Directions for Director Movie Projectors in The First Phase CD1***

#### All Together

To start, double-click the *All Together Projector*. Clicking on different parts of the image will activate small clips. (For example, clicking on the light, doorway's, the picture and corner of the room.) To get back to the original scene click at the bottom of the image (sometimes you will have to wait until the segment is finished before you are able to do this). To exit, press the apple and full stop key on the keyboard.

#### Map Movie

To start, double-click the *Map Projector*, then click on one of the rooms (only the lounge-room, hallway and bedroom can be activated). In the bedroom the light can be activated. In the lounge-room the light, corner and picture can be activated and in the hallway the door is active. Click on *Map* to return to the original scene. To exit, press the apple and full stop key on the keyboard.

#### Narryna Installation 320x240

To start, double-click the *Naryna Inst. Projector*. This piece requires you to roll the cursor over various 'hot-spots' in the imagery. It starts with a scene of a closed front door. Roll the cursor over the doorway to enter and repeat the process with the partially opened door. Once inside you are confronted with the image described in the paper. Moving the cursor over different parts of this will activate various segments. Try areas that interest you (for example, the lighted window). The bottom left side of the image gets you into one room (roll the cursor over different items in the room to move around), the bottom right into another. Rolling the cursor over the stairway will let you move upstairs into two further rooms. To exit, press the apple and full stop key on the keyboard.

## Random Garage and Random Wedding

To start, double-click the *Garage or Wedding Projector*. To activate, click once with the mouse. To stop, click once with the mouse. To exit, press the apple and full stop key on the keyboard.

## Motion Experiment 3

To start, double-click the *Motion 3 Projector*. Click with the mouse to activate the segments. To exit, press the apple and full stop key on the keyboard.

## Pressure Experiment

To start, double-click the *Pressure exp. Projector*. Click with the mouse to make the figure appear and disappear. To exit, press the apple and full stop key on the keyboard.

## Hall Run

To start, double-click the *Hall Run Projector*. Click on the lighted window to activate the segment. To exit, press the apple and full stop key on the keyboard.

## ***Directions for Director Movie Projectors in The First Phase CD2***

### Motion Interactive

To start, double-click the *Motion Projector*. Clicking once with the mouse activates the sequences. To exit, press the apple and full stop key on the keyboard.

## ***Directions for Director Movie Projectors in The Second Phase***

### Jumps 50% test1

To start, double-click the *jumps 50%test 1 Projector*. The Return key takes you to the next movie. Key number One takes you to a memory flash if there is one, otherwise it also jumps to the next movie. Any other key

pauses the movie, press the key again to continue. To exit, press the apple and full stop key on the keyboard.

### Old blends/blow

To start, double-click the *Blow Projector*. Pressing any key causes the movie to appear and disappear. To exit, press the apple and full stop key on the keyboard.

### Jumps 50% random

To start, double-click the *jumps 50% random Projector*. The Return key will take you to the next movie. Key number One takes you to a memory flash. Key number Two will return you to the previous movie. Pressing any other key pauses the movie, press the key again to continue. To exit, press the apple and full stop key on the keyboard.

### Jumps random 2

To start, double-click the *jumps random 2 Projector*. The Return key will take you to the next movie. Key number One takes you to a memory flash. Key number Two will return you to the previous movie. Pressing any other key pauses the movie, press the key again to continue. To exit, press the apple and full stop key on the keyboard.

### Adding more2

To start, double-click the *adding more 2 Projector*. This time the Return key will pause the movie (press it again to continue) while Key number One will activate a memory flash. To exit, press the apple and full stop key on the keyboard.

### Cue points

To start, double-click the *cue points Projector*. The Return key will pause the movie (press it again to continue) while Key number One will activate a memory flash. To exit, press the apple and full stop key on the keyboard.



## ***Directions for Director Movie Projectors in The Third Phase*** **CD1**

### **Hall Loops 2, 4 and 7**

To start, double-click the appropriate projector. Key number One will activate a memory flash. The Return key will pause the movie (press it again to continue). To exit, press the apple and full stop key on the keyboard.

### **Hall Loop 8**

To start, double-click the *hall loop 8 Projector*. Key number One will activate a memory flash. I have removed the programming that pauses the movie so the Return key no longer functions. To exit, press the apple and full stop key on the keyboard.

## ***Directions for Director Movie Projectors in The Third Phase*** **CD2**

### **Bedroom piece**

To start, double-click the *Bedroom piece Projector*. This piece has no keyboard controls, it simply plays. To exit, press the apple and full stop key on the keyboard.

### **Bedroom piece version 2**

To start, double-click the *Bedroom version 2 Projector*. As with the previous version, this piece is designed to play continuously without keyboard controls, however, to appreciate what it was like to be continually returned to the start of each movie, click once with the mouse. To exit, press the apple and full stop key on the keyboard.

### **Anna's House1, 3, 4 and 5**

To start, double-click the appropriate projector. All of these pieces are designed to play continuously without keyboard controls. To exit, press the apple and full stop key on the keyboard.

