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Remembering Bogle Chandler: an exploration of new media's storytelling potential

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Abstract

Remembering Bogle Chandler is a digital narrative that incorporates photos, line drawings, text and sound playable using a graphical user interface (GUI). The work describes the characters and events surrounding the mysterious deaths of Gilbert Bogle and Margaret Chandler in Sydney on New Year's Day 1963. Users can retrieve and play 104 movie clips (photographic images, animations, text and sound) from the project's digital library. The GUI is both an image illustrating connections between movie clips and an instrument for controlling them.

Remembering Bogle Chandler tells an old story in a new way. In order to explore the novel qualities of the work, this article employs terminology and concepts from three essentialist theories of digital media that define the ways in which digital media differ from old or legacy media. To assess the impact of these properties on storytelling, the article also explores audience responses to the work.

Keywords

storytelling, new media, digital media, interactive narrative, modular, variable, transcoding, participatory, Bogle Chandler

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1. Introduction

Digital narratives (*The Whale Hunt* (Harris 2007), *Constellations for Wittgenstein* (Clark 2009), *Welcome to Pine Point* (Simons & Shoebridge 2011)) exhibit characteristics not found in old (or 'legacy') media (television, cinema, radio and print). It is important for designers and artists to observe how these characteristics manifest in digital narratives, and to understand how users experience these characteristics. Such an analysis develops a conceptual language for thinking and talking about design problems (Murray 2011), indicates themes, plots and strategies that take best advantage of the innate properties of the medium (Ryan 2004), and reveals areas of future change and improvement (Manovich 2001).

1.1 Essentialism in digital media

Artists have always tried to identify the unique formal properties and communicative potential of their medium of choice (see da Vinci on painting versus sculpture (1970) and Eisenstein on montage (1967)). Similarly, digital artists and designers have theorised about the essential properties of their work. Much of this research has focused on comparisons between storytelling in old media (film, books, theatre, and television) and new media (websites, computer games and other software). Three influential scholars who formulated essentialist theories of digital media are Janet Murray (*Hamlet on the Holodeck* (1997) and *Inventing the Medium* (2011)), Lev Manovich (*The Language of New Media* (2001)) and Marie-Laure Ryan (*Avatars of Story* (2006)). This article uses some of their language and concepts to describe the novel characteristics of my digital narrative, *Remembering Bogle Chandler*, and to discuss how users perceive them.

There are many similarities between the essential properties of digital media described by Murray, Ryan and Manovich; the ones they most frequently describe and discuss are their:

- numeric code (Manovich 2001) which allows previously disparate elements (text, animation, photos, illustrations and sound) to exist on multiple channels of the same work (Ryan 2006).
- participatory or interactive nature (Murray 1997; Murray 2011; Ryan 2006)
- modularity, that is, the discrete elements from which they are constituted (Manovich 2001; Ryan 2004)
- variable (Manovich 2001) or volatile outputs (Ryan 2006)
- programmability (Ryan 2006), ability to execute procedures (Murray 1997; Murray 2011), or automated operations (Manovich 2001)

There are, however, observable shifts in perspective and purpose between the theories described above. For instance, Murray writes for designers and describes for them a palette of *affordances* (actionable properties) they can use to create digital narratives. According to Murray, digital works are procedural, participatory, spatial, and encyclopedic (Murray 1997). For Murray, the most significant of these representational properties is procedurality, because this property is not available to designers of legacy media (Murray 2011). Ryan writes from the user's perspective and focuses on the features that detract from or enhance the user's experience of a digital narrative. These features are programmability, interactivity, volatility, multichannel and networking capabilities (Ryan 2006). Writing from the user's perspective, Ryan maintains that the most important feature of a digital narrative is its interactivity, that is, "the computer's ability to take in voluntary or involuntary user input and to adjust its behavior accordingly" (Ryan 2006, p. 98).

While Murray positions herself as a designer and Ryan as a user of digital narratives, Manovich takes a more historical view. He attempts to write “a record and a theory of the present” (Manovich 2001, p.33) in which human culture is being uploaded to computers. He rejects the idea that his principles are intrinsic properties of digital media, preferring to see them “not as absolute laws but rather as general tendencies of a culture undergoing computerization” (Manovich 2001, p.49). As a student of postmodern theory, Manovich seems concerned to avoid a charge of technological determinism according to which a culture’s social structures and values are the products of its dominant technologies (Bolter 2007). As such, Manovich’s principles are intended to describe the current forms and content of digital media, but not to predict or determine their future. His principles of new media are numeric representation, modularity, automation, variability and transcoding (Manovich 2001).

Compared to Manovich’s approach, Murray’s is both descriptive and prescriptive (Bolter 2007). Not only does she describe the unique affordances of digital media, she argues that designers should exploit and maximise each of these affordances in their work (Murray 2011). In other words, designers should make their work as participatory, procedural, spatial and encyclopedic as possible, and by doing so they will “create satisfying experiences” (Murray 2011, p.100). Whilst this prescriptive approach offers some comfort and security, designers who apply it too literally may produce formulaic work. Murray’s promotion of the spatial and encyclopedic characteristics of digital media is particularly problematic. Although navigable space is an interface metaphor favoured by many videogame and website developers, it seems presumptuous to insist on its use in all digital narratives. Similarly, just because many digital works store and transmit encyclopedic amounts of data, this does not mean that they all should. In fact, when it comes to storytelling, less is often more. Since Murray’s spatial and encyclopedic affordances seem neither fundamental nor unique to digital media, I have not addressed them in this analysis of my work.

The question of which properties of digital narratives are intrinsic to the medium (fixed) and which are optional or malleable is a particularly significant one for designers. Manovich’s principle of *transcoding* (the principle he regards as “the most substantial consequence of computerization” (Manovich 2001, p.63)) can be seen as an attempt to tease out these distinctions. Transcoding is essentially a process of remediation (Bolter and Grusin 2000) in which digital designers use the computer to translate and refashion older media forms. Transcoding describes the ongoing computerisation of culture in which designers create work that can be operated by both humans and computers. Digital designers use the conventions of previous media forms as ‘skins’ to make the arcane and inhuman processes of the computer more palatable to users. This results in narratives that are also databases, and realistic worlds that are also software interfaces. Manovich has further developed the concept of transcoding in his more recent writing on software studies in which he investigates the role of software in forming culture, and the role of culture in forming software (Manovich 2008). Manovich’s approach is less accessible than Murray’s, but it restores control to the designer. As he notes, designers don’t have to accept the trends that currently dominate digital media. By understanding these features as ‘trends’ rather than intrinsic properties, designers can develop alternative approaches in their work.

The dominant properties of new media observed by Manovich, Ryan and Murray (excluding Murray’s spatial and encyclopedic properties) are discussed in the following case study of *Remembering Bogle Chandler*, a documentary work describing real events. Section 2 gives a brief description of the Bogle Chandler case, and section 3 describes how I conceived and developed a new media work based on it. In section 4, selected properties of digital narrative are used as lenses to analyse how *Remembering Bogle Chandler* differs from previous versions of the same story, and how users experience these differences.

2. The Bogle Chandler case

Gilbert (Gib) Bogle and Margaret Chandler met for the first time on Christmas Eve 1962 and died only metres apart less than a week later, early on New Year's Day 1963. Gib Bogle was a gifted scientist working at the prestigious Commonwealth Scientific and Industrial Research Organisation (CSIRO), married, and the father of four young children. Bogle was about to take up a position at Bell Laboratories in the United States and it has been suggested that he was involved in Cold War espionage (Dalton 1970). Margaret Chandler was a nurse, also married, and the mother of two young boys. The pair met at a Christmas barbeque and began their flirtation, which continued at a New Year's Eve party. At the end of the party Margaret accepted Gib's offer of a lift home. On the way to Margaret's house they stopped the car at a secluded location on the banks of the Lane Cove River and were violently ill; Gib died quickly, and Margaret died a few hours later. Their partially-undressed bodies were found in the morning by a man walking his dog.

The case scandalised conservative Sydney, perhaps more due to the revelation that the Boggles and the Chandlers maintained 'open' relationships than to the manner of the deaths (Chandler 1969); it remains a focus of the public's fascination with mysterious and gruesome deaths in the same way as the cases of Azaria Chamberlain (Bryson 2000) in 1980 and JonBenét Ramsey in 1996 (Schiller 1999). Tabloid papers (most notably the *Sun Herald* (owned by Fairfax), the *Sunday Mirror*, and *Sunday Telegraph* (both owned by News Corporation)), published bizarre stories about the murders from the time they occurred in 1963 until well into the 1980s. These included theories that it was a crime of passion, a sex drug overdose, a practical joke gone horribly wrong, a satanic sacrifice, or a cold-war assassination. Tragically, the families Gib and Margaret left behind never learned how they died; many aspects of the case remain puzzling, even after the application of modern forensic methods, and the case continues to be the subject of speculation.

As well as the newspaper reports, the story was told in two books, an inquest report and a television documentary. Leicester Cotton, who was at the New Year's Party with Margaret and Gib, wrote *The Bogle Mystery* (1963) under his pen name, Stafford Silk. Geoffrey Chandler, Margaret's husband and the primary murder suspect, also wrote a book provocatively titled *So You Think I Did It?* (1969). The case was also documented in a more formal and scientific manner through the 1963 inquest proceedings. In recent years a dramatized documentary about the murders, *Who Killed Dr Bogle and Mrs Chandler?* (Butt 2006) introduced the theory that Bogle and Chandler were poisoned by hydrogen sulphide from pollution in the Lane Cove River. I drew on all of these original sources as content for my digital narrative *Remembering Bogle Chandler*.

3. Development: telling the Bogle Chandler story through new media

My interest in the Bogle Chandler case stems from my mother, who lived near Margaret and Geoffrey Chandler during 1960 - 61, in Kew, Melbourne. Margaret and my mother both had dachshund dogs and they met sometimes whilst walking them. In addition my parents are scientists and, like the Boggles and the Chandlers, worked at institutes and universities in Melbourne, Canberra and Sydney. That a double murder could remain unsolved within this community of freethinking, unconventional, and accomplished scientists perplexes me to this day. My own interests, of course, are not in science but in digital media, and as I began to comprehend the potential of the computer as a storytelling machine, it was a short and natural step to conceive of a digital project based on the Bogle Chandler case. The case was an ideal subject because it was obvious that its many complicated, puzzling and unexplained features could be fashioned into multiple pathways for a digital narrative.

The technical features of *Remembering Bogle Chandler* are straightforward. The data are in the form of photographic images, animations, text and sound, combined into 104 separate movie clips. The user views these clips by operating a graphical user interface. This interface is a collection of graphical icons or buttons that are spatially arranged to communicate the structure

of the narrative, and is both a set of images illustrating the connections between these movie clips and an instrument for controlling them.

The work was created using Adobe Flash® and Photoshop® software. At the time I made the work (2007-2008), Adobe Flash was the most pervasive cross-platform web format for interactive, animated projects, with up to 98% of users able to view Flash Player content worldwide (Adobe 2012). Authoring in Flash meant that a large and diverse international audience could view the project. Although *Remembering Bogle Chandler* was designed as a stand-alone website, it is also perfectly suitable as a museum piece or art gallery exhibit.¹

When I published the work in 2008, I invited feedback from users via email. About a year later, I added an online survey to the site to capture feedback.² The questionnaire comprised four parts. The first part focused on theories about the murder. Respondents were asked to nominate the murderer and the poison they used. The second part assessed prior knowledge of the case, since this was relevant to how well respondents understood the material presented in the narrative. It was useful to understand how well the website communicated the story to users who had never heard of the murders. The third part focused on the design of the website, and respondents were asked to rate the website's informativeness and ease-of-use. The last part of the questionnaire asked respondents to nominate their age range and gender. To date, 157 people have responded. In what follows, I discuss data from the survey that shed light on the way these respondents experienced the novel properties of *Remembering Bogle Chandler*.

4. Digital Narrative Properties in *Remembering Bogle Chandler*

In this section, some of Manovich's, Murray's and Ryan's properties of digital narratives – *numerical/multichannel*, *modular*, *variable/volatile*, *procedural/automated*, *transcoded*, and *participatory/interactive* – are used as a framework to explore how the digital narrative, *Remembering Bogle Chandler*, differs from traditional versions of the same narrative, and how users experienced these differences.

4.1 Numerical and Multichannel

Every visual, sonic and behavioural element of a digital work is *numerically represented* (Manovich 2001). This means that old media forms, such as text, image, video and sound, can be liberated from their traditional forms of physical storage (for instance paper, canvas, celluloid film and magnetic tape) and combined on *multiple channels* of a digital narrative (Ryan 2004). The fluidity with which the computer can combine media forms has resulted in *spatial montage* becoming a defining feature of digital media (Manovich 2001). In spatial montage, each visual or sonic element is layered or combined with existing elements, as opposed to the temporal montage of television or cinema, in which each frame replaces and erases the last.

Temporal and spatial montages convey different types of experiences. The temporal montage of cinema appears like the immediate perception of events, whereas the spatial montage of the computer screen appears like a memory of past events (Manovich 2001). Animations in *Remembering Bogle Chandler* are primarily spatial montages in which the user can trigger several elements (text, image, animation and sound) to play on the screen simultaneously. Spatial montage is especially suited to *Remembering Bogle Chandler* because one of the main themes of the work is memory. As the user activates certain links, these montages build and accumulate to create unique combinations (see Figure 1). Some of the images remain on screen, forming a backdrop for other memories, whilst others fade after a few seconds. Sounds are also triggered and these combine and fade in a similar manner. One survey respondent commented: "though some frames disappear too quickly, this adds to the elusiveness of the story's facts". Another wrote that the site's design was "hauntingly put

¹ *Remembering Bogle Chandler* has been exhibited in galleries and at festivals in Australia, the USA, Germany and Argentina.

² The questionnaire can be viewed at <http://www.rebeccayoung.org/html/survey.htm>

together". The spatial montages of *Remembering Bogle Chandler* help to convey a primary theme of the work, which is that memories are elusive, unreliable, and subject to decay.

Figure 1. An example of spatial montage in *Remembering Bogle Chandler* (Young 2008)

4.2 Automation or Procedurality

Many of the operations involved in the creation of *Remembering Bogle Chandler* are automated procedures. For instance, I created some animations with an automated process known as in-betweening (or tweening), in which the beginning and end points of the animation are defined and the computer creates the frames in between. Tweening is used in the project to make images grow, shrink, rotate, squash, stretch, fade up or down, and move across the screen. Other animations were automated using procedural animation, in which movement is not pre-recorded but generated according to procedures (or rules). These animations simulate natural phenomena (such as the falling of rain drops, the rippling of water, the falling of leaves, the movement of clouds and fog, and the swarming of insects), artificial phenomena (such as the flickering of celluloid film, the static disruptions of a television screen, and the typing of a mechanical typewriter), and more abstract phenomena (mathematically generated geometric lines and randomly flashing colours) (see Figure 2).

Figure 2. Procedurally animated lines, colours and image transparency (Young 2008)

The visual interface is automated to perform certain functions. According to the cognitive scientist James D. Hollan, interfaces can be classified as cognitive artifacts that redistribute "cognitive tasks between people and machines" (Hollan in Wilson and Keil 2001, p. 379). The interface is designed to help the user find 'clickable' areas of the screen through automated rollover events. When the user moves her mouse over one of the interface buttons, several visual changes occur to focus the user's attention and indicate the button's function. The interface also provides hints about what the different buttons do through pop-up images and text. The most important task that the interface performs is to help the user find and play the animations they want to see. These buttons are automated so they appear 'greyed out' if the animation has already been played. Thus the interface reminds the user which modules she has already viewed, and this frees up her memory to concentrate on other tasks.

4.3 Modularity

A new media object is modular in the sense that it is composed of independent modules that can be accessed, modified, or substituted without affecting the integrity of the work (Manovich 2001). These modules can be recontextualised, recombined, and transformed during the run of the work (Ryan 2004). The modules (or story fragments) of *Remembering Bogle Chandler* typically contain an eyewitness account, newspaper report, or forensic evidence relating to the murders. The modules are represented as different combinations of photographic images, animation, sounds and text; each is separate and self-contained and thus can be accessed in any sequence.

The modules of the work vary in length and complexity. The shortest and simplest ones are the newspaper excerpts that show text typing onto a fragment of newsprint. The longest modules occur during the investigation of the murder scene. For instance, the images in Figure 3 are taken from an animation in which tattered cardboard boxes dissolve to reveal the body of a woman. This sequence illustrates the discovery of Margaret Chandler's body on the riverbank. Accompanying this sequence is a series of written quotes from Sergeant Andrews, who discovered Margaret's body: "I saw a depression in the ground covered by flattened out beer cartons . . . I lifted a piece of cardboard and saw the head and shoulders of a woman" (Young 2008).

Figure 3. The discovery of Margaret's body (Young 2008)

The modules of *Remembering Bogle Chandler* each perform a particular function within the narrative. Some modules provide background information about the story. For instance, Geoffrey Chandler explains that he brought his wife, Margaret, to the CSIRO Christmas barbeque as a distraction from her dull life as a stay-at-home mother. In the next module he describes her first meeting with Gib, and their instant attraction to one another. Some modules raise questions about what will happen next. For instance, Margaret confesses to Geoffrey that she wants to sleep with Gib, raising the question of whether she will follow through on this desire. Other modules refer to historical information about the period (such as the Cold War, the Sydney libertarian movement, and the deep conservatism of post-war Australia).

Users of *Remembering Bogle Chandler* can choose the order in which they view its modules, and this enables them to compare each character's version of the story. According to Ryan, multiple cognitive processes may be used to interpret a narrative (Ryan 2011; see also Herman 2011). To understand a plot, for instance, it is essential to grasp the motivations of its characters. Whilst a character may claim pure motives, their true state of mind is revealed through their actions (Ryan 2011). Several of the characters in *Remembering Bogle Chandler* (for instance, Geoffrey Chandler, Ken Nash, and Ruth Nash) seek to convince the reader of their innocence. However, their explanations are sometimes inconsistent, or at least curious, compared to their actions. For instance, in one module Geoffrey Chandler claims Ken Nash's party was boring so he left to go to another party. In another module Ken Nash sees Geoffrey return to the party and mix himself a drink. One respondent concluded that Geoffrey actually left the party to procure some LSD, and that on his return he mixed the drug into drinks for Gib and Margaret: "It is obvious he returned to the party [and] spiked the black coffee with a massive overdose of LSD." Another respondent doubted that Ken and Ruth's party was the innocent affair they claimed it to be, since they both became virtual recluses after the murders. Even more curious is the fact that they both died on the anniversary of the murders; Ruth of

cancer, and Ken of a self-inflicted gunshot wound. The respondent wrote: "I have suspicions about the Nashes: why were they so deeply affected for so long about the deaths?"

The characters of the narrative clearly have their own motives for telling the story the way that they do. The friends and acquaintances of the victims are at pains to appear respectable and normal, whilst the police and forensic scientists portray themselves as methodical and thorough. The media, on the other hand, are looking for scandal and try to discredit both groups. Newspaper fragments imply that police failed to preserve evidence or overlooked vital clues. Despite the fact that guests at Ken Nash's New Year's Eve party describe it as restrained, and even dull, the tabloids report that it was a wild and debauched affair. Instead of singing 'Auld Lang Syne', one tabloid depicts the guests performing a black mass. A popular tactic of tabloid newspapers is to make 'folk devils' of certain groups by describing them in a stereotypical manner and portraying them as a threat to the social order (Cohen 1972; Hall 1978). Thus Gib Bogle, Margaret Chandler, and their friends are painted as bohemian, drug-taking swingers, radicals and beatniks. Geoffrey Chandler is often described in newspaper reports as 'the bearded Dr Chandler', as if his beard is an outward sign of his inward depravity.

In designing the work I particularly aimed to find contradictions between the different versions of the story. Such contradictions were easy to find, since each storyteller had a different motive for telling the story. The inconsistencies between modules or story fragments of *Remembering Bogle Chandler* are intended to raise questions in the user's mind, and to inspire them to further explore the work to resolve these contradictions.

4.4 Variability or Volatility

Variability is the property of digital works that describes the way their modules can be reconfigured, recontextualised and recombined in multiple ways (Manovich 2001; Ryan 2004). Manovich illustrates the potential for variability in a digital narrative using the semiological theory of syntagm and paradigm. In a digital narrative signs can be strung together in a chronological sequence (the syntagmatic dimension) or grouped together by some other variable (the paradigmatic dimension) such as the spatial locations in which events occur (Manovich 2001). For instance, in the series of digital narratives entitled *Soft Cinema* (Manovich and Kratky, 2002 – 2004), an algorithm selects movie clips according to different variables: their 'content' ("geographical location, presence of people in the scene, etc."), or their 'formal' properties ("i.e., dominant color, dominant line orientation, contrast, camera movement") (Manovich 2002a, p.5). Similarly, in *The Whale Hunt* (Harris 2007), the user can select content according to variables as diverse as 'food', 'games', 'kids', 'prayer', 'blood', and 'wildlife'.

The potential for variability in *Remembering Bogle Chandler* is illustrated in Figure 4, which shows the interactive timeline and interactive map of the project interface.

Figure 4. The interactive timeline and map (Young 2008)

The interactive timeline allows the user to view story modules in the order they occurred, from one character's point-of-view. (A similar historical timeline that allows users to switch perspectives on the same events can be seen in Murray's *StoryLines* project (Murray, Goldenberg, and Agarwal 2011a).) The same scene can also be played via the interactive map that allows the user to switch perspectives within the story space. In effect, the interactive timeline and map of *Remembering Bogle Chandler* are different interfaces to the same set of narrative modules (the existence of multiple interfaces to the same content is another consequence of the variability principle (Manovich 2001)).

An expanded section of the *Remembering Bogle Chandler* timeline (Figure 5) shows how the story is mapped on a horizontal/chronological/syntagmatic axis and a vertical/point-of-view/paradigmatic axis. Each module can be accessed in a chronological sequence (left to right) or compared to other modules seen from a different character's perspective at the same moment in time (top to bottom). Alternatively, the user can access the story modules in a more stochastic manner. No matter which path the user chooses, it is a unique one deriving from the variability of the digital narrative.

Figure 5. A section of the timeline expanded to illustrate its paradigmatic and syntagmatic content (Young 2008)

The timeline and map interfaces reveal chronological and spatial information that is hard to visualise from the text. For instance, by exploring the map of the riverbank (see Figure 6) the user can discover that Bogle and Chandler walked a long way from their car before they died. This information is crucial for appreciating the mystery of their deaths. If they were poisoned, why did they walk such a long way? And if they were healthy when they started walking, when and how were they poisoned? By using the timeline the user can discover that the length of time between Bogle parking his car and the moment he died was a mere thirty minutes. His rapid decline indicates the extreme toxicity of the poison that killed him. In another animation from this scene, an eyewitness drives along the track towards the golf course and sees a strange man running towards the river. By exploring the map further, the user will find that the man was running toward the stretch of riverbank where Margaret's body was later found. Did the running man cover the bodies, or was he the murderer? While a detailed study of all the original eyewitness testimony could have revealed these connections, the timeline and 3D map of the scene makes these connections immediately apparent.

Figure 6. 3D maps of the bridge and the riverbank (Young 2008)

It could be argued that the timeline and map interfaces of *Remembering Bogle Chandler* transfer some of the user's cognitive load to the computer (see Hollan in Wilson and Keil 2001). According to the cognitive narratologist, David Herman, the interpreter of a narrative constructs her own mental model of the story world (Herman 2011). Similarly, Ryan writes that to make sense of a narrative, the user must construct cognitive maps of the story world - a process that requires tracking the movement of characters and objects through time and space (Ryan 2011). In *Remembering Bogle Chandler*, the spatial and temporal interfaces can be seen as concrete versions of these mental models. Rather than construct their own mental model of the storyworld, the user can interact with these visualisations to unravel the complexities of the narrative.

The supposition that the interfaces make it easier for the user to compare and assimilate information is supported by the user survey. This shows that of the 66% of users who were unfamiliar with the Bogle Chandler case, 92% found the site informative and 6% somewhat informative. In addition, 72% of all respondents were able to use the information gained from the site to nominate the person or persons who they believed committed the murders. One respondent commented that the site was "excellent in being clear in explaining the whole saga" and another wrote that the project was "a great way to review the information". Some respondents who were unfamiliar with the case were able to construct elaborate theories about it, demonstrating that they had assimilated and synthesised the information contained in the website. Several respondents were particularly appreciative of the way they could actively explore the story world in a kinesthetic and tactile manner. Comments included "I like the use of the time line and the way you can dip in and out of the story either here or by clicking on iconic visuals", "I really enjoyed poking about and finding new bit of information" and "a really effective way to process the information of the crime in a tangible way".

The events leading up to the murders of Bogle and Chandler are presented through multiple perspectives. To appreciate how these sequences confirm and contradict one another, the user must compare them, both sequentially and associatively, and through the dimensions of time and space. These contradictions provoke questions, not only about the events themselves, but also about the reliability of human perception, the veracity of human memory, and how human beings deceive themselves and others. By recontextualising and recombining the story modules, the user constructs variable sequences of comparison and contradiction. In this way the user experiences the complexity of the story, and, more generally, the complexity of human experience.

4.5 Transcoding

Remembering Bogle Chandler is an illustration of transcoding, in which the conventions and operations of traditional media are combined with those of digital media. The work is structured according to computer conventions, yet it represents cultural material. Since human users cannot easily comprehend or access the computer layers of the work, the interface presents the story fragments in sequences of time, space and point-of-view. Organising the interface of the work in terms of time, space and point-of-view makes sense to users because films, novels, and video games are also organised on these dimensions. Films and novels are primarily organised chronologically, although some may present the same events from different viewpoints (for instance, the film *Rashomon* (Kurosawa 1950)). Traditional narratives are not often laid out spatially, although there are some examples (such as *The Norman Conquests* (Wise 1977)). Spatial narratives are, however, entirely commonplace in video games (Jenkins 2004).

Each scene of *Remembering Bogle Chandler* is visualised using a third-person omniscient perspective, as seen in strategic life simulations such as *SimCity* (Maxis et al. 1989) or *The Sims* (Maxis 2000). This representation provides the user with a bird's eye view of each scene, allowing her to manipulate and watch multiple characters simultaneously. In addition, I used isometric rather than linear perspective in the interface. One advantage of isometric perspective is that it simplifies image creation. The image has no vanishing point, so no matter where an object is in the image 'space', it retains its original measurements. Because objects do not change size as they move about the visual field, there is no need to scale objects or to distort them in order to simulate linear perspective. The main advantage of using isometric perspective, however, was that it enabled me to treat the whole representation in a more abstract way. Each spatial representation could serve as an illustration, a map and a set of controls.

The interface of *Remembering Bogle Chandler* is a collection of abstracted images (maps and montages). The visual style of the interface does not attempt to make the viewer forget she is in the presence of a medium, or that she is in the presence of the objects and people represented. In fact, the interface of *Remembering Bogle Chandler* actively works against an illusion of a separate believable space. There is no attempt to maintain the illusion that we are looking through a window onto an alternate reality. Rather, the spatial montages of *Remembering Bogle Chandler* are reminiscent of collaged memories of different spaces and times. Together with the stylised interfaces, they remind the viewer that they are watching a highly mediated narrative.

For Manovich, transcoding describes the way the *representational* conventions of traditional media are being combined with those of digital media. For instance, many of the animations exhibit the visual influence of print (in the columns of text of the newspaper clippings), celluloid film (in the grain, dust, and gate weave of the party animations) and old television broadcasts (in the 'snow', noise and rolling 'hum' bars of the riverbank animations). As well as the influence of these well-known traditional forms, the work exhibits some characteristics of obscure visualisations like the *diorama* (see Figure 7), a minor narrative form primarily found in museums. The timeline of *Remembering Bogle Chandler*, with its abstract representation of connected points and coloured lines, also references London's iconic tube map. In contrast to the designers of the first generation of cultural interfaces, contemporary interface designers are able to appropriate visual metaphors, not only from films, books, television and the standard human-computer interface, but from visualisations, video games and other information devices.

Figure 7. The 3D map is reminiscent of a diorama (Young 2008).

Despite the unorthodox and eclectic nature of the *Remembering Bogle Chandler's* website design, 58% of the respondents found it easy to use and 27% somewhat easy to use. Interestingly, some respondents who found the website less than easy to use saw this as part of the challenge. For instance, one respondent wrote that the website was "interesting to use which is better than easy in this case" and another that "the format is at first a bit confusing but is appropriate to a 'mystery' and enjoyable to collect the 'evidence' a bit at a time using the interface". Another user was able to overcome the initial challenge: "once I got into it, it was very easy, and rather amazing, to use". These responses suggest that, like videogames, digital narratives can embody challenges in their interfaces as long as these are appropriate to the role the user plays in the narrative.

4.6 Participatory, Interactive and Networked

Digital narratives are participatory in the sense that they can accommodate and respond to a user's actions (Murray 2011). They are networked in the sense that they can connect people across space and time (Ryan 2006). The user's interaction within a digital narrative is constrained by the part she plays within the story. In *Remembering Bogle Chandler* the user does not alter events, she uncovers events that have already occurred. The narrative can be categorised as a mystery or detective story that the user interacts with on a diegetic rather than a plot level in order to solve a puzzle (Ryan 2005).

Remembering Bogle Chandler can be situated within a group of artworks that share what the art curator Ralph Rugoff terms a "forensic aesthetic" (Rugoff et al 1997). Works that exhibit this forensic aesthetic position the audience within the aftermath of an unseen, invisible history that has occurred 'off screen'. In these works, the picture plane becomes "an arena of evidence", placing us, the audience, "in a position akin to that of the forensic anthropologist or scientist, forcing us to speculatively piece together histories that remain largely invisible to the eye" (1997, p.62). In this arena, every detail, no matter how mundane, becomes a potential clue. Every detail is a "contradictory fragment", part of a "patchwork fabric of a 'reality' in which pieces of the puzzle are consistently missing or seem to radically change meaning when viewed from another angle" (1997, p.104). As viewers, we must divine the meaning of these clues by placing them within a larger symbolic structure.

Rugoff identifies this forensic aesthetic in a diverse range of works, including conceptual art and installation, from the 1960s on. It is also a strong thread in interactive works, such as

video games and interactive installations. In the video game *Myst* (Cyan 1993), for instance, the user finds herself on a deserted island where she must uncover clues about which son, Sirrus or Achenar, murdered his father, Atrus. The interactive installations of *Life After Wartime* (Gibson & Richards 2003) combine archival crime scene photos from Sydney, 1945-60, with evocative texts and sounds that hint at the crimes that might have occurred 'off camera'. In the interactive installation *Pentimento* (Favero 2002), a body is discovered on the fringes of Sydney, and the user has to interpret the events leading up to the murder from the points of view of a brother, a sister, and a father. Rugoff's description of the forensic aesthetic has strong parallels with the embedded narrative described by Jenkins (2004) as a space where the user uncovers the narrative information embedded in its mis-en-scene, such as the clues needed to solve a crime. Like these works, *Remembering Bogle Chandler* requires experimentation and repeated interrogation from the user and has a similar forensic aesthetic. The user experiments and repeatedly interrogates the story modules as she attempts to uncover the 'unseen history' at the heart of the narrative.

Participation in digital works also encompasses social interaction (Murray 2011) that occurs via networks that connect people across space and time (Ryan 2004). Jenkins notes that there is "a public desire to participate within, rather than simply consume, media" (Jenkins 2002, para 20). The original design of *Remembering Bogle Chandler* did not accommodate user participation. After I posted it on the web, however, it soon became apparent that users wanted to respond to the work. Users emailed me to provide feedback about the useability of the website, and I used this feedback to refine its design. I received feedback from several forensic scientists who wanted to discuss some of the evidence in the case. Several people sent me images that I was able to use as reference material. For instance, an astronomer sent me an image of the Murraybank radio telescope that featured in the first scene of the narrative. Other people simply wanted to discuss their theories about the case. I created the user survey, in part, to enable users to receive social validation of their theories. The survey allows users to choose the person (or persons) and the poison they believe killed Bogle and Chandler, and to view the choices other people made.

Compared to traditional publishing models, which typically embody one-way communication, digital publishing is a two-way street. When Bogle and Chandler died in 1963, it was newspaper journalists who decided if and how they would report the story. Although readers at the time could send letters to the editor, they had little influence on journalistic content. For those people unfortunate enough to be targeted by the tabloids, there was little recourse but to write their own book (as Geoffrey Chandler did) or retreat from the relentless gaze of the media (as Bogle's wife and children did by moving to New Zealand). The most poignant responses I got to the website were from the children of people (victims, witnesses and investigators) who had been involved in the case. These children, all middle-aged now, wanted to speak for their parents and to tell their stories, something they had hitherto been unable to do. The ease with which I can communicate with these people via digital networks and the fluid and modular nature of digital media means that adding these extra stories to *Remembering Bogle Chandler* remains a possibility.

5. Conclusion

Many of the distinctive properties of digital media are observable in *Remembering Bogle Chandler*. The survey suggests that users will experience the properties of digital media in a positive manner if they are applied in ways that complement the narrative's genre, themes, content and user interaction. The properties of digital media are applied to communicate these aspects of *Remembering Bogle Chandler* in the following ways:

- Its numeric representation creates a fluidity of sound and image that reinforces the themes of memory, loss and decay.
- Its automated procedures help the user to locate and learn the functions of its interface, and retrieve and view its story fragments.

- The modularity of its content and variability of its structure enables the user to view its story fragments in any sequence. Thus the user can compare the moral outrage and inflammatory rhetoric of the tabloid papers, the subjective experience of individual witnesses, and the forensic evidence collected by police. This comparison helps the user piece together the complex sequence of events, and assess the accuracy of each character's story and/or their moral culpability.

- The variability of its structure means that the work can either be accessed via a chronological or a spatial interface. These interfaces act as cognitive aids that help users to visualise and comprehend important spatial and temporal aspects of the case.

- Its transcoded nature means that its interface is influenced by many traditional and contemporary interfaces (newspapers, cinema, television, software interfaces, dioramas, maps and videogames). These references to well-known interfaces communicate, through visual metaphor, the functionality of the website.

- The participatory nature of the work means that users can, and expect to, communicate with the work's makers and its other users.

The kind of user participation elicited by *Remembering Bogle Chandler* (exploring, discovering, comparing, contrasting) is particularly suited to genres in which the user investigates past events (for instance, as a detective, scientist, or archaeologist). What is missing in the work is a means by which users can communicate their findings to one another and achieve a sense of having 'solved' the mystery. Another area for future research is to trial methods by which users can contribute their own content to a digital narrative. The properties of digital media pose many challenges for the storyteller, but they also promise to facilitate novel and inclusive forms of storytelling.

Biographical note

Dr Rebecca Young is a new media artist and lecturer in the School of Media and Communication at RMIT University, Melbourne. She has worked in film, television and new media since 1990, as an editor, designer, illustrator, animator, and researcher. Rebecca's research interests include interactive narrative, online art, interface design and visualisation techniques. Her online narrative work has been widely exhibited and has received several awards and nominations.

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