

The Interactive Narrative

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Abstract

We have all been exposed to narrative, a fundamental aspect of communication from stories to structured discussions. Stories are told to us as children and help us to understand our world, and our place in it, or to transport us into the realm of the possible, into the world of the imagination. Throughout history various narrative forms have emerged, stories told through different media. Each different story form brings with it its own level of interaction, the media determining the levels of response by the consumer.

A new form of storytelling is emerging, that of the interactive narrative. The aim of this research is to investigate the traditional narrative techniques to determine how they interact with the audience, in order to apply them to the emerging narrative structure.

The interactive writer and production team has to understand the differences between traditional narrative and that of the computer-based experience. Issues to do with non-linear story structure, human and computer interaction, visual language, problem solving and design all contribute to the interactive story.

Introduction

If an interactive producer or writer is asked to define the structure of their project, the response may involve flow charts of intricate intertwining multiple narrative paths, discussion on linearity, non-linearity, characterisation, stereotyping and genre. Ask two producers for a theory or a template for interactive design, or even a basic guideline on how to approach creating an interactive narrative, and the answers will be contradictory, the maps will be tangled messes of interlinking paths, nodes, events, and outcomes. (Mueller 1996) No two interactive designs are the same, each writer approaches the design of the interactive story with different aims, goals and story structures in mind.

The aim of this research is to investigate how the different methods of traditional storytelling create an active response in the consumer, with a view to understanding and incorporating the various established narrative techniques in the creation and design of the interactive narrative. The fundamental differences between the traditional and interactive narratives will be examined, as well as establishing strategies for creating a cohesive interactive experience. Even though the interactive narrative is an emerging story form, a number of approaches are needed when attempting non-linearity.

Narrative theories will be discussed in Chapter One, not to deal with the intricate detail of narrative ontology, but to establish the level of the reader's interaction with the story. As part of the writing process, the writer necessarily has to conceptualise and structure their project, using various traditional literary techniques. These techniques, when used effectively, increase the degree of involvement, cognition, integration and understanding of the information by the reader. The tools used to assist the cohesiveness of narrative, such as time, viewpoint, plot, genre, metaphor, characterisation and spatial relationships, form a one-sided discourse, and create an evoked world in the reader's mind. How effectively these tools are used, when added to the reader's literary background, determines the richness of the narrative experience.

The emotional impact of narrative elements outlined in Chapter One is based not only on extensive research, but on observations made whilst working in both radio and television. Narrative viewpoint determines the level of involvement the consumer has with the story. Theories on the relationship that the viewer has through the camera's eyes and the emotional impact of the selected point of view have been developed over fourteen years of media experience, and these ideas have been extended and developed further in Chapter Two.

With the advent of photography and cinema, a strong visual narrative evolved, telling stories with pictures rather than words and changing the way that audiences relate to storytelling. The photographed image not only provokes a response, but also defines how the viewer sees the world and their place in it. The

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structures of cinema purport to hold a mirror to society, creating a realistic representation. Audiences see film as a trope for human experience, rather than being a constructed reality. As the methods of telling the visual narrative became standardised, allowing filmmakers to recognise and reproduce the elements that make the visual grammar, audiences came to expect visual content to be delivered in a certain form. The techniques used in cinema, such as shot size, camera angles, lighting and music, build certain expectations of the visual discourse. And the expectations of how the visual language is delivered in television and film maps directly onto how a computer user expects their visual experience to be constructed.

Ideas on how the visual language of the cinematic tradition has been altered by the interactive medium have been outlined at the end of Chapter Two. The adaptation of theories on the televisual and the constructed reality to the interactive domain constitutes a new perspective on the relationship between image and reality. This section constitutes original thinking on the relationship between user and connoted environment.

There are fundamental differences in the narrative experience of an interactive product to that of literature, film and television, one key difference is the influence of games. War games formed the genesis of computer gaming, where the environment became the experience, rather than the telling. Chapter Three outlines how gaming created a new way to conceive the interactive story, based on the exploratory experience, where the user discovers the story, seeks it out rather than having it delivered. Human-computer interaction, when combined with gaming environments, story structure and the power of the image, adds an extra layer of narrative involvement. Although the virtual environment is a construct, the user develops the feeling of an alternative reality, a world without definable edges or restrictions. This of course is a myth, but nonetheless, interactivity increases the narrative involvement in a way that has been previously unattainable.

The writer, when creating the interactive screenplay has a number of new issues that have to be addressed. Their story can be essentially linear, non-linear or a combination of the two. Because interactivity entails choice, the number of narrative possibilities can become endless. So the writer has to create structure in the story, exactly defining the number of choices and events sequences so that the production team is able to create the interactive title. How the interactive structure can be conceived, the presentation of the interactive story and the documentation needed by the production team will be discussed in chapter five.

The author also requires a basic understanding of how the dialogue between human and computer can be achieved. Dialogue involves a level of mutual understanding and takes place on the meeting ground between the user's environment and that of the computer. That place of discourse is at the interface, on the computer monitor screen. Chapter Four outlines how the design of the interface is crucial in determining how the user understands the functionality of the program, allowing the user to conceive a mental model of how they think the program works. Comparing narrative devices with theories of cognition enables an understanding of the expectations and presumptions of the computer user.

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An integral aspect of interaction is the use of problem solving. Because the user is often required to complete mind-bending puzzles, it is useful for the production team to get some basic understanding as to how researchers believe people think, remember things and solve problems. Based on empirical observations, various models on how human thinking have been developed, and limitations of human memory and cognition will be also discussed in Chapter Four. If the process of interaction places too much of a cognitive strain on the user, an effective dialogue is unable to occur.

Chapter Five contains a number of case studies, where the techniques and interactive structures of existing titles are examined. Rather than expressing the interactive structure in terms of intricate flow charts, a spatial model of the interaction of each story is outlined. These models enable a rapid understanding of the event structures that have been employed by successful interactive writers.

But before launching into the various techniques of constructing story, it is useful to get an understanding of narrative. What it is how it has traditionally been structured, what its contexts and origins are, and how it is defined.

Chapter One: The Origins of Narrative

1.1 Definition

Early definitions of narrative describe it as a **story** initially containing instability, conflict arising out of that instability and a resolution (Leitch, 1986). Classifying narrative as that which contains exposition, conflict, climax and resolution is an extension of Greek philosopher Aristotles view that a fable “is that which has a beginning, a middle and an end” (Aristotle, 1846 pg. 420). Aristotles structure formed the philosophical genesis of narrative, which evolved during the enlightenment and is essentially a modern construct. (White 1987)

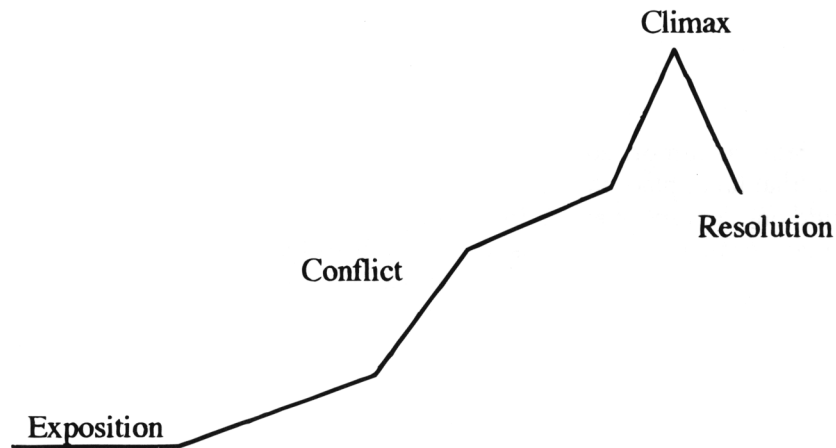


Figure 1: Traditional Narrative with a linear structure

Most modern narratives, be they the novel, oral storytelling, cinema or television, contain a variation of this structure. The majority of linear narratives commence with exposition, explaining the setting and laying the framework for the story to come. At the end of the preliminary exposition stage, there comes a crisis point, where the protagonists are spurred into taking some sort of action. This action has its consequences, causing further complication and conflict within the story. Figure 1 describes narrative tension. The line, representing rising action, lifts from the state of relaxation to a narrative climax, the reader’s interest increasing as the story progresses. Narrative tension increases, as the plot crises drive the protagonists towards the climax, which is the definitive moment where all can triumphantly succeed or miserably fail. The climax of a story is where the protagonist has to make some sort of choice. And “if that choice is to be compelling, it has to involve some question of Right & Wrong” (Wimberley and Samsel 1996 pg 191). It is the story’s ethical dimension that makes a story dramatic. The climax not only creates closure, but also resolves an inner conflict for the main protagonist (Wimberley and Samsel 1996). The three act play, present not only in theatre, but also in cinema and television,

has evolved with complication points occurring at the end of each act, so that the patrons, so intrigued by what is going to happen next, return from intermission. The same structure is used for television, where program breaks or commercials are played at the end of each act, just after each complication.

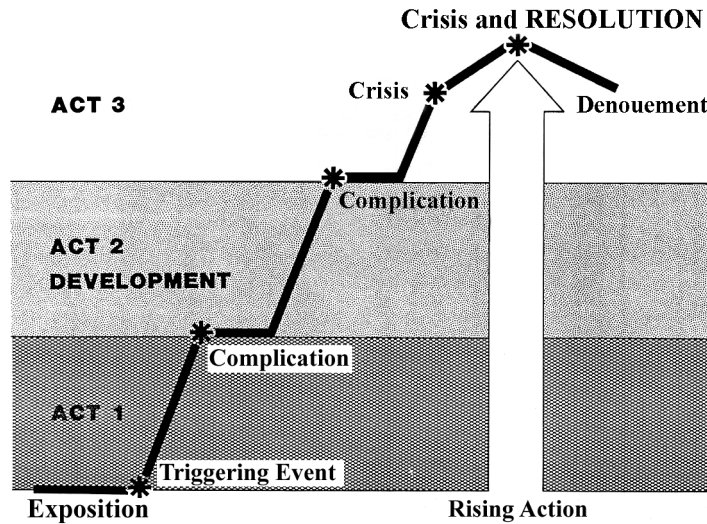


Figure 2. The Three Act Play.

In the post-modernist era, this traditional structure may appear dated. Stories can end without resolution, contain no conflict, and may not even demonstrate any sort of differentiation from the normal state of affairs; yet they are stories nonetheless. So the definition of story must depend on something other than a “beginning, middle and end”. The definition itself requires the consumer’s participation.

Stories are a telling, a discourse, a series of events, thoughts or descriptions that cohere in a fashion that leave the impression in the audience that they have indeed been told a story.¹ It is the audience who defines whether they believe they have experienced narrative or not. As a result, there has been continual theoretical debate throughout the ages on what constitutes narrative and what does not. But to leave the definition simply in the terms that story is like art, in the eye of the beholder, would belittle the intricate structure devised by the author in order to tell the tale.

Robert Scholes and Robert Kellog (1966 cited in Leitch, 1986) said that narrative works are “distinguished by two characteristics: the presence of a story, and a storyteller.” In order for there to be narration, there must be a narrator. Narrative is a structured, organised telling of a tale by a person who is either implicit in the story, or who is the vehicle through which the tale is told.

¹ My thanks go to David Hayman, Winsconsin University, author of *Re-Forming the Narrative: Toward a Mechanics of Modernist Fiction* for clarifying this point.

Stories equally are the representation of a sequence of events. They are not the events themselves, but an ordered telling or retelling of fictive or real occurrences. Stories do not depict the intricate minutiae of a person's life, or events that surround it, but pick out highlights, relevant aspects, or even interesting diversions (Fleishmann, 1990). This editing and reordering is at the heart of narrative structure. Narrative is created after the event. Like history, the causal influence of one event on another is seen in retrospect. The interpretation of the reasons and causes as to why action is taken, or why events happen is constructed in the telling, not at the time of the events themselves. It is the causal linkages between the events, the reasons behind why things happen that glue them together into narrative. Events happen because something triggered them. As a result of an event, action is taken.

It is when investigating the event structure of narrative that the temporal order of the representation of events becomes relevant. Events happen in a time sequence, but the retelling of events may not reflect the sequence in which the events occurred. The author, who may play with time in order to reconstruct a coherent narrative thread through a series of events, imposes this structure. Gerald Prince created what has been considered a definitive definition of storytelling when he stated that "narrative is the representation of at least two real or fictive events or situations in a time sequence, neither of which presupposes nor entails the other" (Prince, 1982, pg 4). Nowhere does Prince say that the represented time sequence need necessarily be linear, merely that there be a temporal ordering of events. Events happen in a linear order, in time, but the telling may jump from one time to another.

Narrative is ordered into segments, chapters or scenes, each of which contains an event or series of events. It is the structural linkages between these segments, and the events within them that create narrative. The links are commonly causal and temporal, equally they may be thematic, location based, metaphoric, repetitious, rhythmic, or may be focused through one or more major crises, which affect the lives of the various characters, be they in one location, or spread throughout a city or a nation.

It is through the links of meaning in the story, and the arrangement of events, that the author creates narrative structure through the tale. Even digression, which some would have as irrelevant, adds embellishment, a sense of place, description, or reveals something of the characters in a story. If the linkages between event structures in narrative are fractured, or if the entire organisation of the narrative were rearranged, randomised, then the resultant discourse would lack cohesion, structure and sense. Narrative is structured so that the elements within it are inter-referential; the order in which the narrative is accessed plays some importance in cognition and assimilation. Randomly segment the story, then arrange it in no particular order, and the references may have no context. The relationships become ill defined, and the cohesive structure of the story breaks down. The result is nonsense.

Even post-modern stories, which appear to be randomised, contain discreet clusters of events, which when seen in totality progress the story through time. Many of these stories purport to be deconstructed but although the linear organisation of the events may indeed be arbitrary, the choice of those clusters and what is contained within them constitute narrative structure.

The same is not true of non-narrative. Non-narrative structures, such as a database, encyclopedia or dictionary can have the elements arranged and accessed in any order, without affecting the overall comprehension of the data. Each element is stand-alone, there is no structured interlinking between the segments. Subsequently if a database is rearranged, there may be some difficulty in accessing the information, but the data itself remains cohesive. There are no temporal or causal linkages between the information elements. So, the definition of narrative could be defined in terms of deconstruction, randomly chop it up into segments, rearrange it, if it's nonsense, the original was probably narrative. If it still retains meaning and integrity, then the original was non-narrative. It's the relationship between story elements, which coheres discourse into narrative. Narrative contains a framework, a progression of events through time, which creates a structure for the telling of a story. And it is this framework, the interlinking and interweaving of meaning that create the cohesive whole that is known as story.

But narrative is more than structure, its richness and beauty lie in description, characterisation, language, the way in which the events effect and change the lives of the characters and of the world it portrays. It transports the reader to a different world, another plane of existence, where they may experience for a while a story other than their own. A reader might express their relationship with the patterns and structures established within the text thus: "I understand what I read because I recognise a reciprocal interrelationship between myself and the work, achieved through a complex, dialectical process of identification and differentiation. The meaning for me is achieved by me through this dynamic process of stimulus and response imposed upon me by the text" (Hamlin, 1978 pg 61). Narrative speaks, and it is the reader who responds, interprets and enjoys.

So, the ultimate definition of narrative remains with the consumer. There must be a recognition by the people experiencing the narrative that they in fact have been told a story, indeed that a worthwhile story has been told (Leitch, 1986). It is through the active recognition of structure, events and linkages between the elements in a story that enables them to distinguish narrative from mere discourse. If threads of meaning are not recognised, if facts are presented without reference to cause and effect, temporal relationships, interpretation, or cohesion, the audience has been presented with a non-related series of statements, not narrative, and are quick to sense the distinction and disjunction.

1.1.1 Historic Context

Narrative appears to be “simply there like life itself...international, transhistorical, transcultural” (Barthes 1977 pg 79) Narrative could therefore be defined as a “meta-code, a human universal on the basis of which transcultural messages about the nature of a shared reality can be transmitted” (White 1987 pg1). However, narrative as we know it, its structure, is a modern construct. (White 1987) While it is true that the theories which guides today’s narrative structure stems from Aristotle, the philosopher was talking about the fable, stories with a moral, which in his day were likely to be presented in verse, rather than prose. The structural form that he proposed was therefore better suited to the short work rather than the longer stories that we access today.

The original storytelling mode was oral, which grew into a rich dramatic tradition of performance, with theatre becoming one of the mainstays of narrative representation. The earliest drama was that of the Egyptians, which was religious in nature and evolved around 3200 BC. Egyptian dramatic performance could best be defined as ceremony, rather than narrative. Theatrical tradition passed to the ancient Greeks, who enriched the dramatic tradition, developing fully structured performances (Wimberley and Samsel 1996). Although Aristotle, who recorded his thoughts in about 330BC made the distinction between showing (mimesis) and telling (diegesis), questioning drama as a narrative form, drama was nonetheless storytelling as direct representation.

Concurrently, the development of the written language enabled narrative to be transmitted indirectly, through the written word. Although works of fiction and mythology, usually represented as epic poetry, carried Aristotle’s principles through the Dark Ages, the non-lyrical representation of history did not occur in narrative form. It is in the recording of history that the lack of narrative form in ancient works becomes apparent. Early historical recordings refuse to tell a story with a well-defined beginning, middle and end. They are the simple statement of facts, where the end of the “story” is simply where the writer decided to stop recording events. And as it is with human nature, it was only the years of hunger or devastation that were recorded, as Hegel remarked, “periods of human happiness and security are blank pages in history” (White 1987 pg 11). Archivists presented facts as they saw them, with no consideration of cause and effect (White 1987).

These writings are best described as discourse, rather than narrative, although they do tell of the events that took place historically. Narrative is the imposition of structure on a discourse, rather than recording events as a mere sequence. Story structure imposed on history is therefore a construction, where the representation of events “arise out of a desire to have real events display the coherence, integrity, fullness and closure of an image of life that is and can only be imaginary”

(White 1987 pg 24). The representation as narrative of non-fictitious discourse is therefore as distorted a representation of reality as fiction itself.

Narrative art has also been present through prehistory to the present day, from cave paintings to Egyptian art, through to the conscious segmentation of different images of events into separate frames. But although early narrative art told a story in visual form, there was no structure to the representation. Events were depicted as they happened, a frozen sequence in time, with little narrative background, exposition or indeed closure. The modern interpretation of these images by art experts places the images in context; the narrative is not only the story depicted in the paintings, but the story of their creation as well.

Stained glass windows also carry a narrative message, where an image can be interpreted as the eye moves around the glass pane. The leadlighting in the windows divides the image, each section displays a different story event (Berger 1997). Later narrative art became comic books, where stylised images contained in progressive frames became a way of focusing the reader's attention on a single idea (McCloud 1994).

The emergence of the novel in the nineteenth century began to fragment the ideas of tight narrative structure as described by Aristotle, who said;

“the fable, since it is an imitation of action, should be the imitation of one action, and of the whole of this, and that the parts of the transactions should be so arranged, than any one of them being transposed, or taken away, the whole would become different and changed. For that which when present produces no sensible [difference], is not part of the fable” (Aristotle 1846).

Stories in novel form became not single episodes, but longer structures, encapsulating more than Aristotle's ideas on completeness and unity in a tale. Story was not assimilated in one single episode, but the length of the novel stretched the narrative over days, or even weeks. The “beginning, middle and end” of the story was not experienced with each reading, but upon completion of the whole story, and the story structure itself expanded to include not one complete action, but an intricate interweaving of many actions. Incidentally, it was with the advent of the novel that many writers drew heavily on the theories of Aristotle as a way of imposing structure on the extended format.

At the end of the nineteenth century, technical innovation enabled the development of photography, but it was the development of flexible transparent film by William Friese-Greene in 1888 that finally allowed movement to be captured. The brothers Lumiere projected the first motion picture onto a large screen in 1895 and founded cinema (Wimberley and Samsel 1996). Motion pictures created a visual grammar, which enabled stories to be told without words, in the

silent era of film. The images portrayed the story, but also added an extra layer of meaning, one that could not exist without the story structure, but acted to augment and enhance the narrative. Thirty years later, film and sound were finally married, the first multimedia experience, with sound used to reinforce and enhance the visual experience (Whitaker, 1970). The combination of moving pictures and sound created a very powerful storytelling tool.

The first experimental television transmissions were made between 1928 and 1935, with television equipment available for sale at the 1939 World Fair (University of Delaware, 1996). Television licenses were sold in U.S.A in the early 1940's, with the medium coming into common usage worldwide in the 1950's. Initially television drew its traditions from live theatre, due to the lack of recording media. Early television was broadcast live, with multiple cameras vision switched live to air. The later technological development of the telecine system, and analogue videotape recorders in 1956 allowed the broadcast of pre-recorded images, including movies. The constructed narratives of film stepped directly into the living room, changing the perception of generations of viewers.

Evolving simultaneously was a technical innovation that could not initially be called a medium, but a tool. The computer enabled many difficult and mundane computational tasks to be completed with ease. The computer could be programmed to provide feedback to the user through a series of visual cues on the output monitor. One of the first popular computer games was "Space War" created by MIT hackers Alan Kotok and Steve Russell in the 1960's. Another simple game with wide appeal was "Pong", released in 1972 which was a simple tennis game. It was this game that introduced many (including the author) to computer-based interaction for the first time, when it was released for home use in 1975 (Wimberley and Samsel 1996). Arcade game manufacturers, who created specialised machines for gaming, grasped the computer processor's potential as an entertainment medium. Versions of these arcade games made their way into household use with personal computer and specialised gaming playstations becoming popular. The demand for interactive entertainment rose. With improvements in storage technology, data transfer rates and processing power, the interactive entertainment delivered to the home has become more intricate, detailed and structured. One of the organisational structures that has been used to deliver content to the end user is narrative.

The problem posed by the new, interactive narrative is that by its very nature fragmentation occurs. Interactivity has at its heart non-linearity, an aspect that traditional, linear narratives do not have to consider. Non-linearity means that any segment of the discourse can conceivably be accessed at any time. If narrative provides the links and associations between events, it is necessary to arrange an interactive narrative in such a way that these linkages remain intact. This is the challenge, how to construct "story" in a medium that lends itself to "non-story", or at the very least, nodality. But before the newer form of story is tackled, it might be wise to understand the various methods used in traditional narrative to create structure, realism and cohesion. The

author's task is to transport the audience to an imagined world, to suspend disbelief, while a carefully thought out and structured story can be told. Traditional narrative interacts with the consumer, but in more subtle ways than that of computer interaction. Each narrative device creates a response, be it emotional or evocative. What technique authors use to achieve this result will be outlined in the following section.

1.2 Narrative Devices

“A writer is a designer, but of text, not of things.
So think of the end users, the readers. How should
we interact with them? My bet is that the typical
reader is in a rush, or bored, or impatient. So get
their attention, and keep it short. Give the critical
points and stop.”
-Don Norman
(Rheingold 1990)

There are a series of devices used by authors in traditional media to help the audience interact and relate to their stories. These devices are used to immerse, engage and create an intimate relationship between the audience and the narrative. Equally they may distance the audience from the events, alienate, irritate, discourage, disorientate, or cloud understanding. They can be used as guides, signposts to anticipated outcomes, or may be used in such a way as to set up, then upset audience expectations. The author manipulates the audience, playing with their expectations, logic, morals and emotions. The level of integration, understanding, cognition and interaction is controlled through the various techniques of storytelling.

Interaction in non-computing based mediums lies more in the realm of how the story elicits some sort of response in the audience. This is necessarily a mental process, as traditional, linear media requires no input from the audience except the act of reading/viewing the story itself. The story is in no way driven by the audience, rather it is presented a *fait accompli*. Interaction can only be couched in terms of how imagery, understanding and assimilation of the contrived worlds is encapsulated and processed in the viewer's mind. Narrative is distinguished from other sorts of discourse by its immersive quality, by the sense of becoming part of another's experience. This imagery and seduction of the virtual world is the result of the provoked response in the audience's imagination, interaction between the presented story and its willing recipients.

1.2.1 Genre and the Evoked World

Before a person buys a book, they must first go to the section of the bookshop that contains the type of story that they are looking for. This is the first step in the process of experiencing narrative, identifying and selecting the story according to genre. Not co-incidentally, it is also one of the first decisions an author makes when undertaking the initial structuring of a story. The author must decide what type of story they will tell, or if indeed their story fits one of the established genres. So what is genre?

Genre

Genres are classes of discourse. Whether the discourse is oral, textual or dramatic, genre is the classification of types of stories into categories. It's the sorting of stories into groups according to content. Genre enables the classification of story before it is written and allows the audience to immediately understand what sort of story to expect before they begin to experience it. The use of genre forms a cultural bridge of common understanding between author and audience. If a story belongs to a particular genre, a set of predetermined expectations is established in the consumer's mind. The audience may choose to watch, read or participate in the story purely on the attraction of a particular genre. Once a story has begun, the audience is then able to establish how the narrative conforms to or diverges from the chosen genre.

But the notion of genre is nevertheless problematic. If genre is the classification of discourse, it is implied that someone did the classifying. If a reader is able to detect similarities between different stories, and group them together into a class, does that mean they have created a genre? The answer is no. There is an historical pretext that has defined genre through the ages, and this helps in the categorisation of the discourse. The types of stories that have occurred historically help the classification of any new story. So the definition of genre involves two processes, one is the abstract analysis of the story; the other is empirical observation. (Todorov 1990).

Society recognises particular forms of discourse and this recognition and classification can colour the actual production of the story. Authors assimilate existing genres and may decide to create their original stories according to a pre-existing type. New stories are produced and codified in relation to the norm, and it is this recognition and codification on the part of the audience (and society) that places a particular story into a genre (Todorov 1990).

The reader, however, may understand a work as belonging to a genre, without the author overtly referencing their work as belonging to that particular class. A work may even have several genres, for example; the novel is a genre, as is literature itself. Classifying works into genres would seem to invalidate the uniqueness of an individual piece. Jacques Derrida puts forward the hypothesis

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that “a text cannot belong to no genre, it cannot be without or less a genre. Every text participates in one or several genres, there is no genreless text; there is always a genre and genres, yet such participation never amounts to belonging” (Derrida, 1980 pg. 61). The lack of belonging allows the individual work to be classified without requiring it to conform in any way to the genre. It can be evaluated by its own uniqueness.

Genre denotes a work’s resemblance to those that have gone before. Genre is the analogy, the identity and the genealogy of a narrative (Derrida, 1980). The audience recognises the story’s predecessors and integrates the ancestor’s themes and motifs when reading or watching a new work. The ancestry of classification is a long one. It began with Socrates, who in Plato’s Republic “distinguished three types of literary discourse, authorial, figural and mixed speech” (Hernadi 1972 pg. 55). This evolved over the centuries into a classification of narrative into the lyric, epic and dramatic (poetry, prose and theatre). This tripartite of classification remained for centuries, and were the only classification recognised by society, and hence by the audience.

The emergence of the novel, film and other mediums necessitated a change in thought on classification. Stories became longer in duration, and the three different generic modes of discourse could be detected in parts of an entire work. Likewise, entire works began to be classified “as evoking a certain type of imaginative world” (Hernadi 1972 pg. 155). Because the audiences were now able to access the different media, the need arose for the classification of the different types of narrative within the new medium. Film critics broadened the notion of genre to include a film’s historical context (e.g. film noir: 1942-1958) and its mix of “narrative, iconographic and stereotypical conventions” (Brophy et al. 1987 pg. 1). So, genre became a loose clumping of narrative types “carrying often an echo of a character type, performance style, visual mode, aspect of tone, or whatever, which is felt (in the viewer) to have been heard in a specific genre” (Brophy et al. 1987 pg. 1).

Many of the classifications that were born in cinema criticism could then be translated across the mediums, between media groupings. So genre types become instantly recognisable independent of the medium. The classification of a book as “science fiction” maps directly onto movies, TV, theatre, radio plays, comics, CD-ROMs and even art with a science based futuristic theme.

When one thinks of a story genre, it is usually populated by certain characters, stereotypes that appear in a particular fiction type. It evokes an imaginary world. Even the occurrences within the story can become codified. Certain scenarios are constantly reworked in a particular genre. A Western is incomplete without a gunfight, a detective novel without a murder seems inconsequential. The truly imaginative author uses these preconceptions and manipulates them. The deviation from the genre, the twisting of expectation creates a story, which, although categorised, becomes original and unique.

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Post modernism and the transformation of the structure and form of the story created a fracture in the classification of works, “for the evolution of modern literature as a whole, the ultimate genre; there is none, for the evolution of modern literature consists precisely in making each work an interrogation of the very essence of literature” (Todorov 1990 pg. 13). Post-modernists have challenged the constricting nature of classification by creating works that defy classification. They see genre as irrelevant (Perloff 1989). When James Joyce’s *Finnegan’s Wake* was first released, readers were unable to decide whether it was a novel or not. It was certainly a book, it was literature, but beyond that it defied classification (Todorov 1990). However, it is part of human nature to classify, to group and to structure, and in the intervening years, such works have been called anti-narrative, non-literature and open works, avant-garde or simply post-modern. Early post-modernist works can now be recognised because we now perceive “postmodern features...precisely because our eyes have learned to recognise postmodern features” (Hassan 1987). The classification is done in retrospect, and historical works that exhibit currently recognised attributes are reclassified into the new genre (Cohen 1989).

As soon as a work is classified as belonging to a particular genre, that genre is no longer the same. Its inclusion effects the history of genre, and future works are codified in relation to the new norm. Genre in this sense is organic, ever changing. New genres are also constantly being born, competing with the old, and creating in the audience’s mind a new relationship and expectation as to what to expect of story. New genres emerge from areas outside of high art, challenging the audience, opening up conventional wisdom and forcing a rethink of the literary or the aesthetic field (Perloff 1989).

The Evoked World

If genre creates an immediate understanding of what sort of story one is to expect it also evokes an imaginative world. The expectations and the mental images created in the mind of the reader using genre is one of the tools that a writer can use to create an immediately accessible imaginary universe. The process of building up this world, of describing it in detail is simplified, as the writer appends the preconceived mental image, and then adjusts it to fit his work. Hence the author “shapes” his work, creating the size of his world, and the general tone or atmosphere that prevails in it. The scope and the mood of a work do not necessarily rely on its size, but on the “capacity of the work to integrate the world evoked by those words into an ordered pattern” (Hernadi 1972 pg. 171). Paul Hernadi outlines three distinct varieties of imagined world, concentric, kinetic and ecumenical.

In literature, the shaping process uses the fragments of language to create a whole world “without noticeable gaps and edges” (Hernadi 1972 pg. 172). The author creates a world within the mind of the audience, which should not only reflect reality (mimesis) but should improve upon it.

Narrative Devices: Genre and the Evoked World

Interrelationships in life are infinite, but the trick is to make the imagined world appear to be never-ending, while containing it within the scope of the work. In art, TV and cinema, this is done by handling the relationship between an image's background and foreground. How the space is defined, the lighting, time of day, texture, how much can be seen, all help to define the scope of the work. In literature the author must create mood and scope by using the literary equivalent. In a short work, such as a small poem, the foreground is emphasised, because of the brevity of the piece, the attention is directed to the metaphoric depth of the words rather than the verbal scope of broader meaning. The background is neutralised and the action or meaning appear to sit on the surface. Invoked is one significant moment or a closely related sequence of moments, the words of the text interrelating internally rather than relying on external references. Because of the internal relationship of the text, such works are seen as concentric, and focus the reader's mind on a single experience, which is complete in itself (Hernadi 1972).

Plays evoke imaginative worlds using cause and effect to create unity of action. Characters speed towards a predetermined climax, as if driven by a kinetic force. The plot is tightly knit, restricted, as in the short story or fairy tale, where the constructed reality can be seen as a separate "naturally detachable, segment of the universe" (Hernadi 1972 pg. 175). The world in these works is restricted, unable to expound a breadth of vision. The metaphor with art would not be a painting with a balanced relationship between foreground and background, but an interior, where the scene is limited by the walls of a room. Natural limits are thus imposed on the audience's vision. (Hernadi 1972)

It is from this type of short and tightly knit structure that Aristotle would have formulated his theories on unity of action. The imaginative world is compressed into small natural units, with a focus on one thematic thought and a containing a small cast of characters. Narrative worlds using this structure often resort to the first person, causing a limitation on what the reader can perceive (Hernadi 1972).

A third type of evoked world is one where the audience is given the impression of unlimited horizons. The work is of such a scale, as in the novel, movie, tele-series or epic poem, where the view afforded to the spectator appears open, broad and unobstructed. The range of the evoked space appears "to be determined only by the viewer's range of vision" (Hernadi 1972 pg. 177). The story does this by appealing to the total world experience of the viewer or reader. Because the works are so large, they deviate from Aristotle's concept of totality in action, because they employ deviation and multiple themes. These ecumenical types of work may have a number of purely kinetic highlights, and provide the background or raw material from which such events may develop.

Many works contain aspects of all three types of evoked worlds, concentric, kinetic and ecumenical, yet these types do tend to prevail in the organisation of the imagined world. The three

Narrative Devices: Genre and the Evoked World

types determine the level of frustration or fulfilment in the audience's perception of the narrative works. Independent judgment also plays a role in the level of satisfaction evoked in the audience. Reactions to a narrative are often mixed in the sense that although the audience acknowledges the outcome, they may wish that the evoked world was otherwise. So the levels of frustration, or displeasure, in the content can balance the level of pleasure received by the audience. It may still be regarded having an excellent aesthetic, it is a believably constructed world, but ultimately unsatisfactory in terms of closure or desired ending. Conversely the audience may reject a contrived or tacked-on happy ending, because it does not fulfil the mood or expectations that have been foregrounded by the author (Hernadi 1972).

1.2.2 Plot and Nodality

Plot is the author's way of organising the events in a story. Before a writer begins to write, he or she usually has some sort of idea of what the story is about. Who did what to whom, when, where and why? One of the motivations for telling a story, plot is the organisation of the events and sequences of a story in terms of a cohesive whole. When most people are asked to describe a story, it is usually done so in terms of plot. What makes any story interesting is its uniqueness. Taking into consideration the history of human storytelling, it is very hard to come up with a truly original idea. So the challenge for the interactive storyteller, indeed any storyteller is to come up with original ways to tell the story, new angles on old themes.

Plot

Paul Ricoeur eloquently defines plot as "an integrating dynamism that draws a unified and complete story from a variety of incidents, in other words, that transforms this variety into a unified and complete story" (Ricoeur, 1985 pg. 8). Plot is a unifying force, weaving together and trying to order the logic of the story, it is the syntax of narrative (Brooks, 1984). It draws from the events in the story, it governs their integration, and hence their comprehension by the audience. "A story is made out of events to the extent that plot makes events into a story" (Ricoeur, 1980 pg. 167). Plot manipulates the audience's thoughts, it guides, it is the "design and intention of narrative, what shapes a story and gives it a certain direction or intent of meaning" (Brooks, 1984 pg. xi). It is plot that maintains the audience's interest, it draws them along, a roller coaster ride of events, linked by meaning, causality, temporality or theme. As the driving force, it causes the audience to read on, to find out what happens next. Nowadays plot goes beyond the Aristotelian definition of beginning, middle and end, to become the "energy, the action in time, and informing movement of ideas" (Dipple, 1970 pg. 3). Plot is the interpretive thread that draws things together, it is the relationship between a chain of events (Brooks, 1984).

Narrative Devices: Plot and Nodality

Plot could be looked at as a string or a line, a thread, which can be knotted, laid back upon itself, cut, re-arranged, curved, made into a circle or even a labyrinth. It can be tangled with other threads, tied up, or twisted into a pattern. "The image of line tends always to imply the norm of a single continuous unified structure determined by one external organising principle" (Hillis Miller, 1978 pg. 158). The line implies linearity, or a temporal line which in its organisation can be reconstructed into whatever pattern the author chooses.

Rather than being a fixed, static structure, plot involves the cognitive activity of organising the narrative, a structuring operation which is "elicited in the reader trying to make sense of the meanings that develop only through textural and temporal succession" (Brooks, 1984 pg. 37). The audience mentally arranges the sense of the story, they discover and interpret the meanings and significance of action. Time plays a role here, for although literature can be non-linear, the reader can flick between pages, it is, however, constructed in a linear fashion, when something is revealed is critical in the development of meaning by the reader. This is true whether the events represented are done so in a linear time sequence or not. The importance is in the significance drawn, through use of plot, by the audience of the events and actions portrayed. And once the significance of an action is understood, the audience wants more. Plot, according to Brooks, is a form of desire, which drives the audience onwards; it not only portrays desire, but also creates it, "desire as dynamic of signification" (Brooks, 1984 pg. 37). The desire to know more, the desire to experience the story as a whole, to remain until the tale concludes.

And that desire is helped by the fact that there is seldom only one plot in a story. Sub-plots add interest to and augment the main plot, constructed to carefully interweave with and add extra detail to the story. The climax points in a sub-plot may occur at times of relative quiet or can coincide with the climax of the main plot, a double explosion of action, conflict and crisis. It is the interplay between plot and sub-plot that adds spice to any tale, an intertangling of narrative threads. The main plot may guide the audience's thoughts and expectations in one direction, the sub-plot may deconstruct and subvert them. Sub-plots draw threads of meaning through less important narrative streams, a story within a story, which may exist separately from the main plot until they interact, one affecting and changing the path of the other. The sub-plot exists to enhance the main story, perhaps to introduce conflict, history or previous allegiances. The classic and most cliched use of sub-plot is the romance.

Because narrative is constructed in retrospect, the beginning of any story has to be determined by a sense of ending. "We might say that we are able to read present moments – in literature and, by extension, in life – as endowed with narrative meaning only because we read them in anticipation of the structuring power of those endings that will retrospectively give them the order and significance of plot" (Brooks, 1984 pg. 94). For example, the knowledge of the greatness of the man will colour the portrayal of the man as a boy, and the significance of childhood actions is constructed in retrospect. Those events, if they happened to a less important person, would be

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endowed with little or no meaning at all. Endings also imply some sort of literary closure, where the plot is drawn together and summed up (Brooks, 1984). Closure denotes a completeness of action, a totality of comprehension. Closure gives the audience satisfaction and a sense of conclusion. Plots without closure seem abrupt, incomplete, and leave the audience hanging in the air, wanting a sense of resolution.

Without a sense of closure, of illumination, the end of a story may seem improper, as if the story was short-circuited, an untimely end. The subplot can act as “a different solution to the problems worked through by the main plot, and often illustrates the danger of short-circuit” (Brooks, 1984 pg 104). The subplot is a way to ward off the untimely end, assuring that the main plot will continue through to the correct and closed ending in traditional narratives. But the threat of the untimely end is part of the energy that drives the plot onwards, the fear and excitement aroused in the reader at the prospect of short-circuit (Brooks 1984). Closure is one of the issues that have to be carefully examined in the interactive narrative. It is very easy to construct a beginning in a multi-branching structure, but it can be quite a challenge to construct endings. It is even more difficult to construct endings that the user will actually discover or encounter at the conclusion of the interactive narrative. But if the author is taking the Aristotelian view of completeness in a story, closure is crucial in drawing the narrative threads together, and should not be forgotten.

A narrative without plot lacks the integration between cause and effect. The structure of exposition, crisis, rising action, climax and resolution is discarded. Peter Brooks argues that “a narrative without at least a minimal plot would be incomprehensible” (Brooks, 1984 pg. 5). Which is not to say that story cannot exist without plot, but the audience must in these circumstances draw meaning from other structural forms. Meaning may be formed from nodality rather than narrative threads. Plot imparts intelligibility, it allows the audience to form the linkages between the events in their minds. It coheres the totality of the discourse into a structural whole. However, the level of comprehension of a plot is directly related “to the reader’s literary competence, his training as a reader of narrative. The reader is in this view himself virtually a text, a composite of all that he has read, or heard read, or imagined written” (Brooks, 1984, pg. 19). So, it is the role of the reader to make sense firstly of the text, then to interpret the text as a trope for human life.

It was the twentieth century modernists and post-modernists who deconstructed plot. The notion of order was lampooned, and the classical structures of plot were parodied (Brooks, 1984). This deconstruction of the plot allowed the audience to become aware of how static the traditional structures of plot had become, the exposition, conflict, rising tension, climax and closure. By deconstructing that structure, they were able to re-classify the idea of what actually constituted a story. But the act of decomposition lead to lack of comprehension and bewilderment. Suddenly the audience was required to piece the logic of a story together, to take an active role in the ordering of the story. As previously mentioned, this was done in part by the re-ordering of temporality, but it was also achieved by a lack of explanation of the causality between events. It

was the post-modernists who established the non-linear plot, and hence opened the way for the nodal story structure.

Nodality or Non-plot

The problem of the deconstructed story is that there can be detected within the seeming lack of cohesion, certain resonances, imagery and repetition which bind elements within the text, and merging the meaning of at least some of the disparate sequences together. The audience grasps these resonances in an attempt to form some sort of cohesiveness from the text. The organisation that provides these resonances is often nodal. Nodal narrative makes the audience work harder to determine meaning. Nodes do not contribute to an overall narrative development, but seem to “break the narrative surface, standing out against or being readily isolable before blending into the verbal context” (Hayman, 1987 pg. 73).

If plot is interlinking, then nodality is a structural clumping. *Nodality is a way of structuring a story, without using the narrative threads and interweavings of plot.* It uses time as a device in this purpose, inherently making use of non-linearity, but it is more than simply being non-linear in structure. If plot is the narrative thread that weaves a story into an integrated whole, then nodality reorganises the basic premise for event structure. If plot is the organisation of the links in meaning between events, then nodality presents the events as discreet identities. This allows the links in meaning to be created either explicitly by the narrator, through repetition of theme, or implicitly by the reader, who strives to construct meaning between seemingly disparate events.

Rather than being a relic or a form of plot, nodality is a discreet structure which allows event nodes, themes, images and motifs to be organised into narrative, where “questions of plot, character, setting and point of view if not narrative tension, are displaced by the question of organisation” (Hayman, 1987 pg. 73). David Hayman describes the nodal structure non-narrative but has since agreed that non-plot is a better term. Others call nodality aliterature, non-teleological and anti-Aristotelian, and question whether works constructed without the use of plot constitute novels or even stories. What perhaps is required is the reclassification by the reader of the basic temporal and organisational structure of what has traditionally been known as narrative. Because a story doesn't fit into the previous framework and structural notions of traditional narrative, rather than being non-story it is perhaps another way to express story (Orr, 1991).

Nodality is the organisation of narrative into discreet packages. The structure is one of nodes or clusters of signification, “by which two, three, or event ten different etymological roots are combined in such a way that a single word can set up a knot of different submeanings, each of which in turn coincides and interrelates with other local allusions, which are themselves ‘open’ to new configurations and probabilities of interpretation” (Eco 1979 pg. 55). Hayman describes a

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major node as being “a complex, foregrounded moment capable of subdivision and subject to expansion...a fully developed node will find enriching echoes in other parts of the book” (Hayman, 1987 pg. 73). These nodes may overlap one another, or through use of repetition and theme form a structured network of signification that is gradually revealed to the audience and forms the basis of structure. This structure is reassuring to the audience, as the repeated use of motif, metaphor or significant redundancy creates clusters of commonality. These are recognised, and the audience starts the heuristic procedure of grouping the units of signification together. Guided by their discoveries of the repetitions within the structure, based on what is previously known and what is discovered along the way, the audience pieces together the story, aided by the author’s use of symbolism, metaphor and imagery. These resonances do not form plot, but rather a thematic unity, like the repetition used in symphonic music, motifs that bind and cohere. The structure is formed through recognition of these motifs, which echo throughout the work (Hayman, 1987).

Major nodes

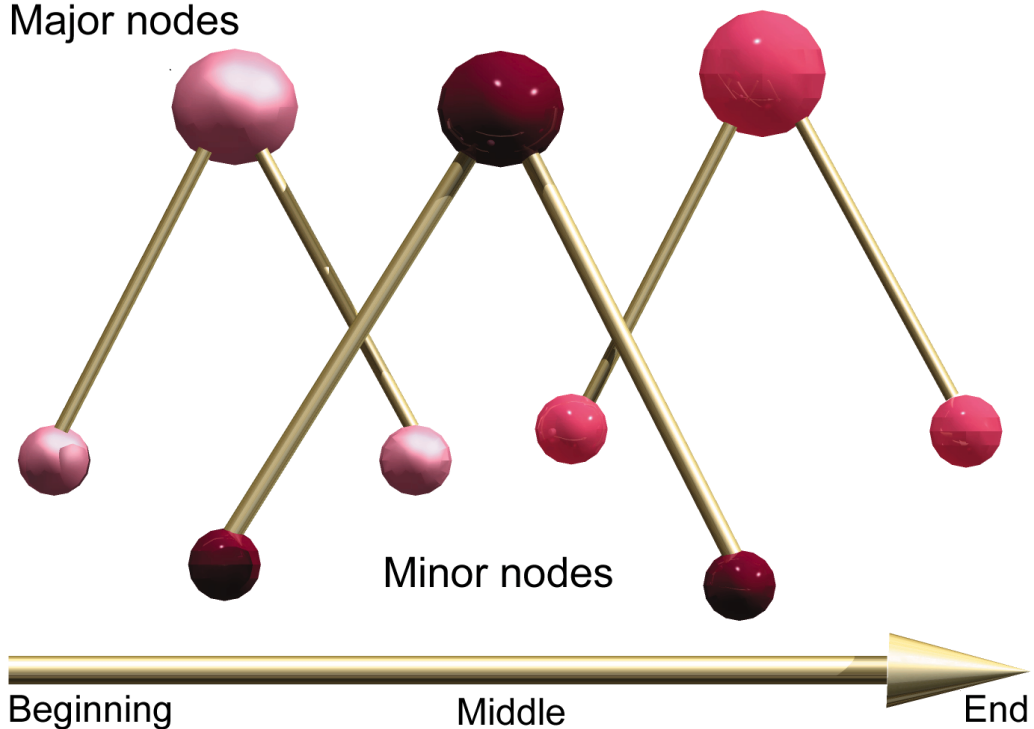


Figure 3. Major nodes buttressed by minor nodes. (After Hayman 1987)

Each individual node can be buttressed by minor nodes, which imitate the themes and symbolism of the major node. These major and minor nodal structures form a network of resonances that appear throughout the non-plotted work, a matrix of signification. There are no structural linkages between the nodes themselves, but they stand out from their surroundings, a discreet focus of attention. Some minor nodes may contain resonances of more than one major node, and the structure starts to resemble a giant genealogical chart of relationships (Hayman, 1987).

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But the repetition of theme, metaphor or imagery has not only been used in the deconstructed story. These devices have been used for centuries as an emphasis, a force of cohesion. The technique is most obvious in the works of diarists and essayists, the *Essays* of Montaigne being one example. Poetry with its cycles and rhythms also function similarly, *Cantos* by Ezra Pound being an extreme case. Nodality even finds resonances in symphonic music, where the repetition of motif and theme work as bridges and emphasises within the web of musical relationships (Hayman 1987). The difference is that in most conventional literature there is also a plot to help drive the story onwards, whereas more contemporary works rely solely on nodality for structure. Nodality can be used in many ways, for the entire surface of the text, its wordness, or to “make possible a semblance of action and even a species of interstitial narrative development...Some novels, however, turn to nodal structuration as a way of articulating varieties of alternative plots...a tapestry of events” (Hayman, 1987 pg 81). It is the effect of constant change, the rapid movement between topics, emotions, moods and locations that captures the audience’s attention and encourages participation. The repetition establishes a “rhythmic beat of our reading and gives shape to a globalizing discourse” (Hayman 1987 pg. 91).

Nodality forces participation on the part of the consumer. It places demands on them, it is their perception of the nodal themes and repetitions that create the structure, the rhythm of the story. The audience becomes a vital component in the cohesion of the story, for without their heuristic perception, the structure remains unidentified and the story reverts to fragmentation, disunity and to use Brook’s term, becomes incomprehensible.

1.2.3 Single and Multiple Viewpoints

Viewpoint is a device used to establish the closeness of the audience to the characters in the story. When an author sits down to write his or her first words, after choosing genre and creating a basic story structure he or she is confronted with the issue of viewpoint. From which point of view should the story be told? It is not a trivial problem. The choice of viewpoint establishes the level of intimacy with the audience. It determines the level of emotional interaction the reader has to the story. It can be used to examine the internal thoughts and motivations of an individual character, or can broaden the narration, allowing an omniscient overview of the tale. Viewpoint is used to include, but equally it can conceal. Viewpoint determines the presence of an audience, and also establishes the presence, or implied presence of a narrator.

It is here that the difference between author and narrator should be made clear. The narrator in a story is the storyteller, the person perceived by the audience as being the relator or teller of tale. The narrator can be a character in the story, or may be implied, choosing not to reveal his or her presence in the narration. The author is the real person creating the story, writing it, constructing it. Confusion arises when there is no narrator defined in the story. On these occasions, as the

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narrator is implied, and it is often assumed that the author is narrator. This implied author might have attributes and values that are quite at odds with the real author of the story (Adams 1985). Equally the author may be relating his or her own story, and hence takes on the role of narrator also, and the role of implied and real author merge.

In grammar there are three distinctively different viewpoints. The narrator is defined as the first person, the narratee is the second person, and the being and object narrated about is the third person (Prince, 1982).

First-Person Viewpoint

The first-person viewpoint could be seen as the most inclusive and intimate of all the viewpoints in storytelling. It is the narrator telling the story from his or her own personal perspective. In the first-person point of view the narrator is one of the characters involved with the story, everything is viewed through his or her eyes, told from personal experience. The events of the story happen around and to the person who is recounting the tale.

In literature the narration is told using the "I" perspective and gains an immediacy and intimacy not accessible by other narrative viewpoints. It can also be used by the author to point out to the reader how limited human perception can be (Perrine, 1970).

The usage of first-person viewpoint in literature has the effect of deeply involving the reader in the story. All of the thoughts, perceptions and raw emotion of the character/narrator are directly transmitted, without interference or interpretation by a third person. Any interpretation of the events in the story is by the character, who is deeply involved in the action themselves, or by the reader, and a very personalised tale can result. In literature, the reader is fully aware that he or she is not the "I" as depicted in the story, but are being told the story, as if by somebody sitting next to them recounting a part of their life.

But the level of involvement goes beyond merely being told the tale. The reader can access the storyteller's intimate thoughts, darkest desires and most hidden secrets. They can experience what the storyteller sees, tastes, smells, feels, hears and thinks. The reader feels as if they are inside the narrator's head, separate to, but forming an almost symbiotic relationship with the storyteller. As a result, the reader becomes very familiar with the character/narrator, and can become accepting of the narrator's actions, even if they feel that the person is morally wrong, they are aware and acquainted with the reasons and motivations behind such actions. (Perrine, 1970)

In television and cinema, the first-person viewpoint is seen through the camera's lens, as if the audience was literally seeing the world through the character's eyes. Initially this viewpoint can

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be slightly disorientating, as it is customary to use the third person viewpoint in the cinematic medium. Other characters act as if the camera were the character, addressing it, asking questions with it, interacting with it. The effect is that the actors look straight at the viewer, demanding attention, confronting, and involving.

The director can carefully manipulate the presence of the narrator/character here. The person represented by the camera's lens can respond to the events "seen through their eyes", allowing the audience to hear their voice. Or the voice can remain silent, with the seen character's response being the only guide to the discourse. The omission of the narrator's thoughts or voice creates a one-sided discourse, where the viewer has to participate in the narrative, in effect filling in the gaps, being forced to interpret and involve themselves. This can be very disconcerting, as the audience may draw the wrong conclusions, or mentally construct the narrator as something that he or she is not. A method used in early black and white experimentation, this one-sided, first person discourse is seldom used by filmmakers today. Another directorial interpretation of the first-person viewpoint is when the identity of the first person character is never revealed.

The first-person viewpoint in TV and cinema creates a slightly mysterious atmosphere. The viewer desperately wants to know whose eyes it is they are seeing the world through. They can become closely acquainted with the thoughts and motivations of the character, but the only hint as to the physical appearance of the narrator may be through their voice, whether the character is male or female. First person viewpoint in cinema is ideal for fear, revealing the presence, actions, motivations and even thoughts of a character, but without revealing their physical identity. First-person viewpoint is used frequently to denote a lurking presence, an unseen and unidentified presence that observes and stalks.

The speech of the first-person character (if used) is created using voice over, narration over image. Close-miking the voice-over, creates closer intimacy, a radio method used to connote inner thoughts creates inner thoughts of the character. Sometimes the director allows the character's hands or reflection to be seen, which gives the viewer a glimpse of the physical presence of the hitherto unseen narrator. The revelation as to the physical characteristics of the narrator may be a device used to shock, or equally to help the audience assimilate the story. The viewer can be made aware of the passage of time through glimpses in mirrors or reflections, as the narrator may age, or change physical characteristics throughout the story.

The first-person viewpoint in the interactive narrative has similarities with that of cinema, but with one fundamental difference. The user is able to interact with the story directly. The screen becomes the user's eyes, it is the user who moves around in the story, with complete control. The decision as to where to look is not made by an unseen cameraperson, the user decides where they wish to go and what they wish to look at. Rather than being a disembodied feeling, the effect is of total involvement. The view is driven by intent, rather than storyline.

The level of audience involvement differs when different mediums are used in the first-person viewpoint. In literature, it is personal, intense, intimate and involved, whereas its use in cinema and television can be off-putting, disorientating, and slightly intimidating. However, the use of first person in cinema and television can also be very involving, moving, story without identity, action without revelation, a cat and mouse game between director and audience. In the interactive narrative the first-person viewpoint is one of total involvement and creates a very close relationship between the user and the story.

Second Person Viewpoint

The second person viewpoint is used in traditional narrative to define the presence of the narratee, the person or people to whom the story is being told. It is signalled by the use, or implied use of the word "you" (Prince, 1982). Gerard Genette defines the difference between an extradiegetic narratee and an intradiegetic narratee. An intradiegetic narratee is a character within the story, who is addressed by the narrator. The extradiegetic narratee is one who is reading or experiencing the narrative. The extradiegetic narratee, according to Genette, "merges totally with the implied reader, who may or may not "identify" with him - that is, accept as meant for himself what the narrator says to his extradiegetic narratee" (Genette, 1988 pg. 131).

The use of an extradiegetic narratee by the author allows the reader or viewer of the narrative to be drawn into and involved with the story, directly addressed as the "you", the narratee. The narrator may welcome, include and encompass the audience's presence, acknowledging their participation in the act of reading or watching the story. Equally, he or she can attack them, jolting them out of complacency, causing them to confront the situations within the story, and that in which they find themselves when they experience the narrative. Addressing "you" may be the device used to introduce diversion, redirect the story, or re-examine certain events. The narrator may question and challenge the audience's morals, expectations or presumptions. The second person viewpoint may be used by the narrator to prematurely end the narrative, calling upon the reader/viewer to draw his or her own conclusions. The direct addressing of the audience by the narrator is a device used to beg involvement, to deconstruct the passive act of reading or watching a story, to add comment, an aside, to include, confide or to confront, upset or insult.

An example of the use of intradiegetic narratee is the depiction of a child listening to a story being read to them by an adult. The "you" in this case is the child, and is directly addressed by the narrator, and the role of the audience is that of a third person, witnessing the storytelling process. The telling becomes part of the narrative as a whole, and involves two situations, that of the story, and that of the environment in which the story is being told. The second person may be also addressed by the narrator/character in conversation within the narrative, as part of the main plot

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itself. The intradiegetic narratee is then less an audience, but rather a participant within the story. It's a less involving method, as the reader/viewer is not addressed directly, therefore is neither challenged, nor confronted.

In cinema, second person viewpoint can be portrayed either as first or third person camera view only, there can be no second person viewpoint through a camera's lens. The narratee is therefore defined by the narrator, who may turn to the camera to address the audience directly, (first person viewpoint) or who may talk to the narratee/character who physically present (third person viewpoint). Another method is using first person viewpoint to address what appears to be the audience (the narrator "looking down the barrel"), however the narratee is given attributes which clearly is at odds with that of the observer, and the conclusion is drawn that the "you" is someone else, another character in the story. This too can be an effective method of involving the viewer, inviting role-play, conjecture and imagination.

The use of the second person viewpoint in the interactive narrative is especially effective when using the extradiegetic narratee. The confrontation between character and user can occur in response to the user's actions. The user does something, and the character remonstrates with them for their absurd behaviour. This is a very playful device, which is not only fun, but also highly interactive.

Third person viewpoint

This is the least confronting viewpoint, where the audience is not required to participate in the storytelling process, merely to observe. The third person viewpoint is also called the omniscient view, where the focus is on the story itself, the being or object narrated about, not the narrator nor audience (Prince, 1982). It is difficult to determine the presence of the narrator in the omniscient viewpoint, as the story does not use the "I" perspective, and may roam to where ever the action is, showing rather than telling, observing rather than interpreting.

In literature the third person viewpoint is marked by the use of "he", "she" or "they" (Prince, 1982). It is about another, a third person, observed by a god-like narrator who can be in all places at all times. The involvement is not personal, the emotions are diluted, dispassionate and separate. The audience can feel somewhat distant from the events portrayed, they are passive, not involved. It is harder to evoke strong emotion in an audience when using the third person viewpoint.

Yet there is a level of freedom in the use of the third person. The author can delve into the minds of different characters, is unrestrained by the physical bounds of an individual character, as is the case in the use of the first person. The motivations of all of the characters can be revealed, as can what they

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think of each other. This gives the audience rare insight into the level of interaction between the characters of a story, and allows the reader/viewer to pick sides, or make judgments as to the flaws and foibles of the various protagonists. The audience is given the opportunity to be objective and are able to make considered judgments as to the various merits or otherwise of the characters (Perrine, 1970).

There are two other variations of the third person viewpoint, each involving different levels of integration between the audience and the story. One is the limited omniscient viewpoint, where the story is told in the third person, but it is as if the narrator is at the elbow of one character in the story, able to move both inside and outside of the character's mind, but never leaving his side (Perrine, 1970). The chosen character may be "a major or minor character, a participant or an observer" (Perrine, 1970, pg. 174). It allows a closer, more personal inspection of the character than the general omniscient view but is not quite as intimate as the first-person view. The limited omniscient viewpoint does not allow the narrator to delve into the mind of other characters, only that of the person whom they are shadowing. The slight distance from the main protagonist allows some interpretation by the narrator into the actions of the main character, something impossible to do in the first-person viewpoint, where the only interpretation that can be done is by the reader/viewer, and the character himself.

The second variation is the objective view where the story does not deal with the inner thoughts of any of the characters (Perrine, 1970). This distances the audience even further from the story, as the thoughts and motivations of people are not revealed, except through their actions. This is the most commonly used viewpoint in cinema and television, where the narrator is merely the recorder of the tale, looking through the camera's lens, without comment, without interpretation. The objective viewpoint is dispassionate, unemotional and dramatic. There is no insight into the nature of the characters, what they think or feel, the narrator does not explain, it is portrayal in its purest form (Perrine, 1970).

Multiple viewpoints

Within a narrative, the author may feel it necessary to alternate the viewpoints, to switch between them, in order to increase or decrease the level of intimacy with the audience. The use of different viewpoints between chapters or segments can be a very effective tool in separating events, or perspectives. Switching from third person to first person viewpoint in a narrative can be used to conceal identity, as in a thriller, where the murder is seen through the killer's eyes. Yet the investigation may be carried out in the third person viewpoint, the identity of the murderer revealed only at conclusion (if at all).

Moving between third person and first person can also be used to introduce multiple narrators. For example, a story may be introduced in third person viewpoint, which describes a character

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arriving, who says "Hey you never guess what happened to me on the way to work, I saw this idiot driver cause an accident". The character then relates his or her story in the first person. On the conclusion of his tale, the viewpoint switches again to third person. Another character may enter and say "You never guess what happened to me on the way to work, I had this terrible accident" and then go on to relate his tale in the first person, which may or may not concur with that of the first narrator. On this occasion it could be said that there are three narrators, the omniscient person relating the story as a whole, and the two other narrators of the tale. This method allows the audience to evaluate the various narrations, and decide which they prefer, or even believe. There is nothing to say that a narrator has to be truthful.

Equally this method can be employed using the limited omniscient viewpoint, where the entire sequence is in third person, only the emphasis switches from on one character to another. The telling in this case is slightly less intimate but can give the audience a more objective overview of the situation.

Switching from third to second person viewpoint can serve as a wake-up call for the audience, confronting them suddenly, directly, causing them to re-evaluate their involvement with the narration. It can be used to comment on the relationship between narrator, author and audience, deconstructing and re-arranging perspectives. Second person viewpoint can also be used extremely effectively in conjunction with the first person, where the narrator sets up a dialogue with his or her audience, and continues this throughout the story. The narrator can then comment on the storytelling process itself, and create chit-chat, splitting the storytelling and story into two distinct parts, and then merging them into an intricate whole.

Alternating between the intradiegetic second person and extradiegetic second person (first person camera) viewpoints in television and cinema can be quite bizarre, as there is no narrator to facilitate the direct address of the audience. The effect is initially that of a third person encounter, which abruptly changes to that of the first person. It is then incumbent upon the characters themselves to address the audience, or the camera, as character, which can create a quite disturbing and surreal quality to the narrative. This method is also used in comedy, where the characters may happily play the third person role, then turn to the camera to comment on the audience's perceived reactions to the narration.

The use of intradiegetic second person is quite common in the portrayal of the storytelling process to a narratee/character, the viewpoint switches moves from the process of storytelling, into depths of the story itself. This creates a distance between the telling of the tale (intradiegetic second person) and the story itself (third person), and embellishment and distortion are quite permissible under such circumstances, as the narrator may interact throughout with the narratee, and elaborate on certain points throughout the narration.

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The use of multiple viewpoints in the interactive narrative effectively changes the level of involvement in the interaction. The first person view allows the user to look through the eyes of the character. The third person view allows them to see the character. In some interactive narratives, the user is able to choose which viewpoint they prefer, whereas in others, the viewpoint is chosen for them. In these cases, at particular action points the author changes the viewpoint. This disorients the user and allows any adversary a moment where they can take advantage.

1.2.4 Characterisation elements

Once viewpoint is established, the next task for the author is to populate the story with people. This is done through characterisation. Characters in a story cannot spring fully formed onto the page, they require careful thinking. Their personal history, culture, ages, sex, physical appearance and psychology all need to be developed and considered within the context of the plot. These details provide a character's background, and can determine how they act, and interact with other characters in the story, and with the audience as well.

If a story reflects life, then character reflects people. Characterisation uses the real-life model of what a person is, the model that exists in everyone's minds, and appends that to representations of characters in narrative. Yet the two are clearly not the same. One lives within the context of fabrication, within the confines and rules of discourse, the other is a model constructed from personal experience. The audience is constantly treading a thin line between how they perceive people to be, and how they must respect the character as created by the author (Hochman, 1985). In the creation of character, the audience is a creative accomplice, they must take the snatches of representation provided by the author and construct from it a "person" (Toolan, 1992).

Characters are drawn from life, yet the author signposts the way the audience should construct a particular character in their minds. The use of external details is one obvious device, where the author describes the character physically. The cragginess of the face, the nicotine stained teeth; the physical features reflect lifestyle and create a mental construct of a particular character type. Another method is characterisation through social function or role. The audience superimposes the characteristics of known social types onto the fictive construct (Leitch, 1986). However, a character may be quite different to their social norm. The interplay between the individual and society may display levels of self-understanding in the character, calling into question the social values of their society, role and era (Gelley, 1987).

An extension of characterisation through social role is the representation of a person through their habitual behaviour, which may have little to do with the plot of the narrative. A person's

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habits or mannerisms bear no relationship to what happens to them in life but may reveal aspects of the inner man or woman which are invisible to himself or herself (Leitch, 1986).

One of the most intimate ways of determining character is through the use of the character's voice. Characterisation through timbre, the quality of the voice marking and defining what sort of person the character is, occurs in theatre, radio, TV and cinema. The use of the dramatised voice, how the character turns a phrase, has a mode of speech, reveals much about the character's background and breeding. The narratorial voice, character as narrator, also forms a picture in the audience's mind as to what sort of person the character is (Leitch, 1986).

Characters are also defined in terms of their beliefs or may present in their embodiment a type of eternal truth. The individual is shaped by the morals that they represent. Most commonly, however, characters are defined in terms of their mental attitudes, their motives, how they see the world and their place in it (Leitch, 1986).

Conflict

And the character's place in the world, how they relate to it is one of the defining motivations for action within a story. In most stories a character is presented with conflict. Conflict provides a motivation for the character's behaviour, a reason for the story. This conflict may embody itself in a variety of ways, but there are three main character conflicts.

A character may pit himself against the natural world, battling the elements, struggling to survive. Or he may fight against the existing social order, being the personification of the misfit, the outsider, or the battler against injustice. This sort of conflict is called "man against the environment". In the former example of this type, the hero generally wins, embodying human history of conquest over nature, but this is not true in all stories. In the latter, man against society, the hero may be defeated by society, an example of this being *Don Quixote*. (Perrine 1970)

The second type of character conflict is person versus person (Garrand 1997). The main character is confronted with another who obstructs his or her life or upsets his or her goals. The two have differences in attitude, outlook or even in what their intentions are and how they approach life (Mueller and Morrison 1995). This antagonist may be actively working against the character, or may be working entirely from self-interest, the result is the same, and the character must overcome this adversity in order to achieve their aims.

Conflict may also arise from internal debate, where the main character struggles with himself over questions of ethics and morality. The protagonist is pitted again his own soul in an internal struggle against his or her own nature, person versus self (Perrine, 1970).

Representation

The audience is presented with characterisation in two ways, directly and indirectly. When the narrator describes the character in depth he does so directly, and the audience must consider the narrator's prejudices and preferences. The mental construct of how a character is can be coloured and manipulated through the attitudes of the person doing the describing. The tone of the portrayal, the emotional distance and point of view all comes into play when describing a character. How the character acts, reacts or behaves in a given situation is called indirect presentation. The audience infers, evaluates and draws conclusions based on presented behaviour (mimesis), rather than by being told (diegesis) (Toolan 1992).

What creates interest for the reader, how the characters become realistic, is not by total revelation but by exclusion. "Even if a storyteller could actually reveal everything about a character, that character would be reduced to an untellable map of behaviour whose interactions, completely determined, left no room for speculation. The audience's narrativity requires incomplete characters in whatever presentational mode" (Leitch 1986 pg. 160). The incompleteness of a character allows for speculation on the part of the audience, a filling in of the details.

If the author includes a character who sits uncomfortably with the expectations of the audience, who is incongruent, the audience may pay too much attention to that individual. This fleshing out is one of the processes that are undertaken by the audience on the assimilation of story (Toolan 1992). The distraction created by a character seemingly out of context, however, may be exactly what the author wishes to achieve. It allows the audience to feel uncomfortable, it distracts their attention from other details, and allows for contemplation...what's a cowboy doing in China???

Characters behave the way they do depending on the narrative context in which they sit. And the audience's response to those characters also depends on how a character's actions are perceived. If the audience does not know the narrative context of a character's actions, then they are unable to construct the inner life of that character. For example: a man viciously slaps a young boy. Immediately an impression is formed as to what sort of character that man is. He might be interpreted as being an overweight blue-collar worker who was physically abused as a child. However, if we know that the man viciously slaps a young boy, making the boy drop the gun that he had held to the man's head, the impression of what sort of person the man is changes. So, it is important for the author to fill in the details which provide the motivations and reasons behind a character's actions (Wimberley and Samsel 1996).

Within a narrative, characters perform certain roles; they pursue their lives, helped or hindered by others. What is interesting to the audience is not what the character *does* in a story, but what they are *like*. Characters should not be seen merely as agents for action, but as interesting people

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in themselves. It is this detraction from the plot, this diversion that engrosses the audience. Characterisation is one of the enriching elements in a narrative. It draws from the audience their knowledge of the world, and applies this to the interpretation of the story (Toolan 1992). Thus characters become alive in the imagination of the audience, they touch the central core of the audience's experience. There are resonances with life, the audience empathises with the people in the story, they cry when the hero cries, they cheer when he wins, they feel the devastation of loss (Brady and Lee 1988).

But the interaction between audience and character can go much deeper than empathy. The reason the consumer likes or dislikes a character depends on how closely the character fits their particular worldview. The reader assimilates the personality of the character and begins to see himself or herself in the role of hero. They see themselves beating the bad guy, throwing the winning punch. The fantasy of the author becomes their fantasy, they imagine what it is like to be the character. The level of role-play depends on how involved the audience becomes in the story. Viewpoint is the key. Viewpoint determines the level of intimacy in a story, but a skilled author can create the magic of role-play independent of which person's perspective he has used. If the character is an old man, then the audience has to internalise what it is like to be an old man in order to interact. They start to see the world through his eyes. That is not to say that the world view of the old man becomes that of the reader, but for the duration of the story the reader sets aside their own belief system and becomes other. However, the translation is not total. If the morals and values of the character strike a basic discord with those of the reader, belief is suspended and the contract between the reader and character is broken.

Characters in stories should be deep, multi-faceted personalities. Their actions should be consistent with their motivations. However, not all characters necessarily need to be fully developed. The examination of their personality should be in proportion to their exposure to the audience. If a person only appears in a scene or two, there is usually no need to go into the intricate details of what motivates their actions. Major, fully developed characters usually develop in some way over the duration of the story. They grow from their experiences, the events in the plot affect and change how they are, or how they see the world (Perrine, 1970). Change, however, does not necessarily have to be for the better.

Stereotypes

One of the quickest and easiest ways to describe a character in narrative is through the use of stereotypes. A stereotype is a character that occurs so often in fiction that their characteristics are well known by the audience, the brilliant detective, and the mad scientist, the monocled Englishman, the evil villain with a thick black moustache. Stereotypes require little effort on the part of the author, and little imagination on the part of the audience. They are easily transferable

between stories and media, a stereotype used in literature is easily recognisable on screen (Perrine, 1970).

Stereotypes are not real people. The presentation of a real person, in non-fiction as a stereotype denotes laziness and lack of research on the part of the author. Humans may appear to fulfil a stereotype, but this is only ever on a superficial level.

Stereotypes can be useful as a way to quickly create a character type, but with alterations and added characteristics, a well-rounded and truly interesting character can be created. As in the presentation of character, where the incompleteness adds interest and intrigue, this is also achieved with stereotype. Omissions and deviations from the type create a person who at first seems shallow, but may be anything but stereotypical, the facade hiding someone who slowly reveals his richness of spirit. Sherlock Holmes is a classic example. He is the brilliant detective, yet his flaws and foibles, his heroin addiction, his violin playing, and possible misogyny all deviate from the character type. His mode of speech, thin and beak nosed physique and deerstalker hat all distinguish him from the norm. So much so that on his fictional death, his readership were so in love with his complex character, that many refused to allow him to fade, and his character and eccentricities continue to be reworked and related to this day (Perrine 1970).

1.2.5 Setting

Characters and events do not exist in a vacuum. And one of the crucial tasks in writing a narrative is to create a constructed world, a setting. Setting *places the narrative within a context*. It is the story's environment and puts the events and characters within a time and a place. Setting dictates the type of action that can occur within a story, and its believability. A traffic jam at the North Pole would need careful narrative foregrounding, or explanation, or the event is simply unbelievable. A character or event that sits outside its expected setting creates the shock of the unexpected. Setting is to some degree predetermined by the genre. Genre sets up an expectation of the type of setting the audience would expect to encounter, and the skilled author can take this expectation and mould it to their own story.

The richness and detail of a setting in a piece of literature is achieved through the author's skill in description. Setting is not a real place but is created in the mind of the audience by the descriptions contained within the work. Description allows the audience to fill in the details of the evoked world. Without the description of setting the characters and events in a story operate in a world that is incomplete, a world that leaves the audience without a map to guide them, without points of reference. The audience is unable to form any impression of situation or any sense of connoted space without a described setting.

Setting is a constructed environment, in the same way that architecture builds up a sense of space within a built environment. In literature, the space is constructed of words, it is a conceptual structure, which brings the reader's experience of the world to the text in order to build a sense of connoted design. The architecture and scenery situated in the text, their description, helps to evoke the mood of a story. It enables the reader to look away from the main action to develop a sense of place, to get their bearings in relation to the events of the story, to get a feel for the texture, lighting, ambience, to situate the characters in their world. Setting is the architecture of the mind.

Environment frames people's behaviour, not only in the real world, but in the world of narrative also. Characters act and react to their surroundings, behaviours are constrained and proscribed to some degree by their situation. Depending on society, location and time, certain behaviours are simply unrealistic. Cultural attitudes and behaviours, modes of speech, fashions and technology are determined by setting. Careful research may have to be undertaken by the author so that the details in the characters' lives are consistent with their temporal setting, if the aim is realistic representation. For example, placing a colour television in an Australian household in 1968 is inconsistent with history. Colour television was not introduced in that country until 1975. Attention to this sort of detail may seem mundane, but it makes the connoted world believable.

Place also describes behaviour. Characters, through their choice of lived environment, tell much about themselves. Their choice of locale, design and size of housing all reflect what sort of person they have become, how they influence their section of the world. People create places, but at the same time, places create people. Events and characters encountered within the environment should have stylistic elements in common with their surrounds. There should be a consistency in the representation of the environment and the characters, and here the theories of genre should come into play. Characters should fit into their settings, in a narrative sense as well as a design style. Incongruity attracts attention and an incongruent object or character raises many questions in the mind of the reader. If raised, the questions should be answered by the story.

Setting must also bring with it a sense of history. In the same way that characters bring to a story their personal history, the setting also develops a character of its own with age. The history of a place brings an atmosphere, the remembrance of past events, the physical decay, and trinkets from past lives. But the character of a setting can also be expressed as a design style. Architectural setting reflects not only the era in which a building was created, but also is characterised by shape, light and shade, and ambience.

In film, setting involves creating the design style of the evoked world, usually involving the construction of real spaces, or sets, or more recently, 3D computer models. Setting is the designer's interpretation of the script. While it is true that the world just beyond the reach of the

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camera's lens is connoted, the world in front of the camera is constructed. The frame constrains the audience's view, and how the director and designer decide to portray that world shapes the expectations of behaviour within it.

Setting can also convey a sense of plot. Virginia Woof, who saw *The Cabinet of Dr Caligari* in 1926, recognised setting's possibilities, writing; "For a moment it seemed as if thought could be conveyed by shape more effectively than words" (Neuman 1996 pg. 7).

A misshapen setting can portray a character's surreal view of reality. Strange angles, distorted perspective, and objects located out of context can all express perceived shape, where the setting becomes a metaphor for the mind.

The set in a film "in order to be a good set, must act. Whether the realistic, expressionistic, modern, or historical, it must play its role. The set must present the character before he appears, must indicate his social position, his tastes, his habits, his lifestyle, his personality" (Mallet-Stevens, 1929). Setting is a force of cohesion, placing the events in context, determining expectations, and characterising situation. Setting is the look and feel of the story, it creates mood, its light and shade. It is not only a design style but can also act as a metaphor for the story itself. Setting allows the audience to place themselves inside the narrative, to see for themselves where the action takes place.

1.2.6 Time Modelling and Representation Issues

Time and setting are interlinked, in that time is an essential part of establishing a sense of place, a setting for the story. A story's temporal setting proscribes the sort of physical setting a story may have, if the story seeks to represent an accurate view of history (which is not always the case.) *A narrative takes place in a discreet time frame, an era within which the events unfold.* And if that time is not within the direct experience of the author, research into that era must be undertaken, so that the story can be consistent with the historical view held by the audience. If a story spans different eras, then they too must be researched, so that the linkages created within the story are not broken by disbelief.



Figure 4. Das Cabinet des Dr. Caligari (1919)

The social mores and expectations of characters' behaviours are dependent on the particular era from which they come. Fashion, architecture and technology, which can all effect the look, mood or outcome of any story are era dependent. The world experience of the characters relies not only on contemporary events, but also on the sum of known history up to and including that of the temporal setting.

Every era also has a strong sense of the future, and "futuristic" projections, based on present experience are firmly rooted to the era from which they are generated. This projected future, as seen from the temporal setting of the story, may be at odds with the knowledge of the audience,

but that inconstancy is not a logical problem. The characters situated in the past cannot with accuracy predict their future.

The meanings developed in a narrative also *take time*, in the sense that the consumer cannot draw the plot threads of a narrative together without allowing time for the narrative to be understood (Brooks, 1984). The understanding of the intricacies and depths of the story are not instantaneously grasped but grow and develop over the duration of the tale.

The *order* in which time is represented is one of the fundamental issues when considering the audience's rapid assimilation of a story. The more closely the temporal representation of events matches that of the events themselves, the easier the understanding of the narration. Even if the event structure is spread out over years, if the representation is linear, placing the events in the order in which they happened, it is easier for the audience to interpret the story.

This is especially important when considering the non-linear narrative, whether it takes a literary postmodernist form, or is part of an interactive narrative. Events, when taken out of their linear time order, are more difficult to understand, and narrative pointers, signposts that help the audience order and mentally arrange the time order, are needed to aid comprehension (unless, of course, temporal confusion is part of the author's aim). Linear representation is the most meddled with device in recent years, where post-modernist writers have deconstructed time, challenging the audience's temporal perceptions. Time has been distorted to such an extent that the interlinking of the narrative threads can often only be achieved when the work has been accessed in full, and sometimes not even then. This need for audience participation can cloud the immediate understanding of a story but allows the audience to construct the story in retrospect, reordering the telling in their minds.

In non-linear novels the past, present and future do not proceed in order, but are constantly present. Leonard Orr (1991) proposes that there are four varieties of time consciousness in the non-linear, anti-Aristotelian novel. "The first variety might be called *retentive* or *recollective* time. Past, present and future are all presented, but the past subsumes present and future. In the second variety, *protentive* or *repetitious* time, the future subsumes the past and present. The third variety might be called *consubstantial* time. The three modes are all present, are all equally important. The fourth variety might be called *frozen* time...Here again the modes are simultaneously present, but time is halted for closer examination, usually of an object, rather than a person (character); this is one of the most important elements in the non-linear novel, and the part most often neglected because of its lack of "human actions" as valorised by Aristotle" (Orr, 1991 pg. 38). Frozen time is a concept used by authors to halt the plot, the progression of events in order to examine something in detail. Usually an object, a feature, a list or letter, time becomes suspended while the narrator goes into intricate detail about the object or letter itself. This description may go on for pages, and upon conclusion, the plot is able to progress, as if the time it took to describe

(and read) something somehow stood out of time. The action then resumes as if the digression did not exist.

The obscuring of the temporal order of the event structure works in a similar way to memory, where significant events may be years apart, and are only recollected at the time of the telling by the storyteller. This involves backtracking, reordering, retelling, repetition. It is entirely a valid form of narrative, but is basically anti-Aristotelian in nature, as non-linear narrative flouts the Aristotelian concept that a story must be a unified whole, and that any re-arrangement destroys the structure of the story (Orr 1991). Aristotle's ideas were true in part, but the essence is in the ease of assimilation of the story, rather than the destruction of its unity. Non-linear novels challenge the audience, make them work harder for their understanding. Unity lies in the links in meaning between the event structures, rather than their temporal representation.

Two Models of Time: Tense

When considering time, one must ask "whose time?" that of the events, the audience or the narrator? The audience surely is aware of their time, and equally knows that when they access the narrative bears no relevance to the temporal relationships within the story. But somehow, they must be aided to place the events in some sort of time order, where things are in relation to each other in the narration. That can be done by referring to the temporal relationship between the storyteller and the events portrayed in the story (Fleishmann, 1990). This is done by the use of tense. *Tense places the event structure of the narration into a relationship with the present time or "now-point" of the narrator.* It is the use of tense that sends pointers to the audience as to the ordering of events and allows them to mentally construct an event sequence.

The narrator may project the time of the story forwards or backwards from their present time, or "now-point" using tense, and it is when the narrator resides in a different time frame than that of the related events that the situation of the storyteller can be introduced and discussed. In most narratives this is not included, but the location and time of the narrator can draw the comparative threads of story together, and act as a thematic glue, allowing the audience a small break or diversion from the main storyline. It also allows the narrator the opportunity to discuss the story, comment on how long it takes to actually tell the tale, and to weave meaning into seemingly disparate events (Prince, 1982). The time in which a story is written also creates its own mood, its use of language, and brings with it a set of social norms that belong to the time when the tale is created. This colours how the narrator uses language and idiom, but the time in which the story is written is the realm of the author. His social values, norms and expectations affect those that he creates in the tale. The temporal distance of the narrator to the time of the events can also introduce uncertainty in the audience as to the accuracy of the portrayal of the events. If the distance is great, say an eighty-year-old retelling his experiences when he was five, the

opportunity for exaggeration, distortion or simply bad memory can arise, and can be used to add ambiguity and misinformation into the tale (Prince, 1982).

The Moving “Now-point”

There is, however, another method of ordering time within a narrative. The present time may be transposed anywhere along a time line so that the narrator’s “now-point” is concurrent with the “now” of the events. In this instance, the temporal location of the current “now-point” for each particular sentence may bear no relationship to the “now-point” of any previous or succeeding sentence. This can be quite disorientating for the audience, who have no anchor, or reference point as to where the temporal location of the “now-point” is in relationship to the other events in the story (Orr, 1991). When tense is the only device used, at least the “now-point” of the narrator moves in a reasonably linear fashion through time. The “now-point” marches linearly to the right along the time-line, from the past into the future. This allows the audience to at least gather their bearings as to where things are in relation to the narrator.

If the author so chooses, other subtle pointers can be used to place the events in time when using the moving “now-point” model. References to people’s ages, time passed from known events, and dates can be used by the disorientated reader to piece the temporal sequence back together (Orr, 1991). But in the non-linear narrative, this retrospective temporal ordering is often futile, as the author is often deliberately setting out to create disorder, disorientation and deliberately wishes the audience to become lost in time. The author would possibly argue that any attempt on the part of the audience to re-order the time sequence fundamentally deconstructs and damages the story. Subverting the author’s intent, the relevance between the events and the order in which the story is revealed is what creates the structure, not a faithful representation of the temporal order in which the events actually happened.

The Skeleton of Narrative: Theme and Metaphor

Once the author has established the basic devices that he or she wishes to employ in the story, it is then time to examine the story as a complete entity. There are a number of narrative elements that form a skeleton, that bind the story together and give it structure. These elements are hidden from view, and only reveal themselves when one has completed reading the story and reflects on the overall sense and cohesiveness of the narrative experience. These elements reveal themselves through repetition, allusion and allegory. These elements work together to form linkages and interwoven threads of meaning throughout the story, they are not plot, but add to and reinforce the issues and events that are dealt with in the plot.

Both theme and metaphor deal with ideas. They are a way for the author to add richness and depth to the narrative process. Theme is a way of conceptualising the idea behind a story, and metaphor is a tool, which allows one idea to trigger a network of associations and connoted images. Both theme and metaphor are used in the body of the story, their meanings are revealed with the assimilation of the text. Both use the image as an element in their construction. Theme makes use of repetitious imagery, and metaphor uses associated images to create meaning within the context of the sentence in which it is situated. The reader's role is vital in the interpretation of both of these devices. Theme and metaphor both require the reader to assimilate and interpret their function within the narrative, as they often reveal multiple layers of associations, which add depth and structure to a story.

1.3.1 Theme

The theme of a narrative can be expressed as a short sentence or phrase that encapsulates the central idea behind the story. *Theme is the central insight that explains the links between the elements within the story, giving the narrative unity.* The conceptualisation of theme is a process that occurs very early on in the process of creation by the author. But the theme itself is revealed throughout the body of the work. It is different from genre in that it does not define the story by categorisation, but rather in terms of the underlying principles behind the story. A story may be a western, (genre) who rob a bank (plot) but is actually about two brothers who try to regain the friendship lost in youth. This is not to say that genre does not have an influence on theme. The progression of themes throughout a work of literature, and how those themes develop differ depending on the genre in which the narrative falls (Fries 1995). Theme does not reflect a particular era or setting of a story but deals with relationships and topics within those settings or eras.

Theme links the literary work with the social, historical and cultural context in which it was created (Ziolkowski 1983). A certain theme may be dealt with in a work that was written in the nineteenth century and again a hundred years later. The manner in which the theme is dealt with can differ greatly through time, because no author exists out of time, or without their own set of cultural biases and prejudices. The observant reader can track the social attitudes regarding particular topics by their treatment in different works at differing historical times. A theme raises a critical question in the mind of the reader, which upon examination ends with an act of interpretation and comprehension. The thematic examination of stories can reveal much about a work that otherwise would be inaccessible (Ziolkowski 1983).

Each story may have a central theme, but there also exist within literary works many other themes that form a web of meaning throughout the work, and indeed, between works of literature, film and television. A theme present in a particular work may have resonances and references with similar works that deal with a similar central idea. Hence a thematic understanding of the metastructure of media can be established. Thematic links can be drawn between works that form a network of meaning on contemporaneous or historical issues. This thematic network does not necessarily have to exist entirely in the realm of literature or drama, but can draw from real life occurrences, and often an historical context is needed to understand some of the underlying themes in a work of literature.

Thematic structure does not necessarily have to be overt. Themes can set up a series of associations between ideas, which on further thought and examination create an entire set of meanings in the discourse. Some themes can be completely missed by the reader on the first reading, but on subsequent examination, or after the text has been assimilated as a whole, some themes can become clearer. This introspection allows a richness to be established in a text, which develops after initial readings. Themes to a certain extent rely on the experience of the reader to be able to interpret the integration of meaning throughout the text.

Not all stories have an underlying theme. The central purpose of some stories may not be to illustrate an underlying central concept, but to thrill, or titillate. A murder mystery's purpose may be to pose a puzzle for the reader to solve, with no reflection on life and the meanings within it. So theme could be said to exist when the author makes a serious attempt to portray life and to reveal some underlying truth about it. Or equally to introduce some concept or theory about life, which the narrative is designed to illustrate. (Perrine, 1970).

Motif

Images and motifs can create thematic meaning. Motifs are more commonly used in music, where a repetition of phrase draws a unifying thread between different movements in a symphony. A motif uses familiar patterns of notes, which recur throughout the larger work. Musical motif relies on the memory of the listener, who grasps at the now familiar set of notes, and links them to musical passages that have just been experienced. Intricate interweavings of musical motif allows structure to be sensed and binds the music into an integrated whole. Narrative motif works similarly, where a general concept may be explored in many different ways within the same work. This repetition of theme forms a pattern, which helps to bind stories together. *Motifs within a story form a rhythmic beat, which can be used to reinforce the central idea in the narrative.*

Imagery

Repetition of imagery is used in the same way. In television the repetitious image may form a conceptual focus for a central idea. Fragments of images, where the complete whole is not revealed until the end of the story, titillate the viewer and maintain interest and curiosity for the duration of the tale. The use of thematic imagery can also point to the central theme and allow the audience to link meaning between apparently disparate sections of the story. Underlying plot concepts may be encapsulated in a series of thematic images, which by their presence may reveal characteristics of the main characters or can hint at possible outcomes.

Theme allows a certain “peeling back” of meaning and can create interwoven sub-texts throughout the plot. However, theme and motif should not be confused with sub-plots, which are storytelling structures in themselves created as secondary narratives, which support the main plot. Theme is subtler. It requires the active evaluation and interpretation of the reader. Themes with their motifs can foreground certain sets of actions using thematic repetition, and when a character enacts these actions it seems natural to the reader when seen within the thematic framework. However, if these actions are seen external to the thematic imagery, the behaviour of the characters may seem absurd. Through the use of theme, a framework for the reasons behind action can be developed within the narrative.

1.3.2 Metaphor

Metaphor is usually spoken about in terms of the poetic. It is a flourish, using extraordinary language, taking the word as its unit of reference. *Metaphor of creates a series of associated images that link the narrative with the consumer’s experience.* Displacing the usual use of words, metaphor

substitutes others that have a similar, extended and often thematic meaning. It unleashes the power that fiction has to redescribe reality (Ricoeur 1979). The use of metaphor enriches the experience of the story by the reader. Its use of substitution reflects how the reader views everyday life. People are continually conceptualising, comparing and categorising the world in terms of similarities, so in life metaphor is a pervasive force. How the world is conceived plays a central role in defining reality. If the world is defined in terms of the metaphorical, then everything experienced in life has its basis in metaphor, and the representation of it in literature is necessarily metaphorical (Lakoff and Johnson 1980).

If genre creates an instant conceptualisation in the audience's mind as to the mood and type of a story, it is metaphor that describes the story in culturally identifiable terms. Metaphor substitutes one element of language for another, but does this *"by virtue of a resemblance between their referents"* (Eco 1979 pg 79). The identification of the referent is not dependent on the empirical relationship with the concept, but on its cultural context. The relationships between signifiers are bounded to some extent by cultural associations and knowledge (Eco 1979). Genre can also proscribe metaphor, by creating an expectation and social convention as to the type of metaphor generally used in a particular story type.

Spatial metaphors from life, such as "more is up" and "happy is up", "sad is down" are defined and understood by society, so when they are included in literature, the understanding is immediate. A happy person is not only "up" in mood, but this is reflected in their posture, more upright, head held high. Metaphor cannot be comprehended if separated from the experience of the reader. It is based on the experiential. The metaphor must be drawn from the knowledge base, common usage, and even the observations of the reader. If the metaphor used in a piece of literature is inconsistent with life experience, it sits as an uneasy representation (Lakoff and Johnson 1980).

A metaphorical representation of a concept can in itself be limiting to the meaning of the idea. For example, the common usage of the concept that "more is up" is not coherent with the notion that "less is better", although both interpretations can be true in life (Lakoff and Johnson 1980). Thus the interpretation of the metaphor, the signifier, can limit the broader perceptions of the reader. The "more is up" therefore "more is better" metaphor used by society does not take into account the aesthetic "less is better." Hence, using this metaphor, the capitalist society does not embrace the beauty of simplicity. If a different metaphoric term is used, then the two can co-exist. Metaphors shape, define and limit the relationship and integration of meaning between the reader and the created world.

Representing one idea under the sign of another that is more striking or better known, a metaphor remains true to its literal meaning, but appends that meaning to the implied meaning of the sentence. Metaphor focuses the reader on the basic level of discourse, the word, but the level of understanding sits at the sentence or clause level. It is not the word alone that elicits meaning, but its context (Babuts 1992). Although metaphor uses similarity in its representation, it is not

simile. Simile could be seen as a more highly developed form of metaphor. Where metaphor says, “this *is* that” simile declares that “this *is like* that”. Therefore, all metaphor could be seen as “implicit comparison or simile” (Ricoeur 1979 pg. 25). Because metaphor is shorter and more concise in its meaning, its usage is more effective, it evokes certainty and is a stronger use of language.

Alluding to every type of word, metaphor is unrestricted in its application. “The adjective, the participle (which is similar to it when acting as an epithet), the verb (which is analysed into participle and copula), and the adverb (which modifies the verb) lend themselves most readily to metaphorical usage” (Ricoeur 1979 pg. 57). In this sense metaphor is a connection not between objects, but ideas. Metaphor characterises sentences, as distinct from merely re-naming words, making it possible to “invoke the ideas behind the words and the things beyond the ideas” (Ricoeur 1979 pg. 58). So the reader is able to see beyond the mere representation into the centre of the idea itself, to see beyond the character into the realm of the thing that possesses it. This seeing of one idea through the eyes of another binds the two concepts together, bringing a more enriching and resonant set of meanings to both. It envelops the reader, who conceives multiple levels of understanding, one overlaying the other, an onion skin structure with each layer flavouring the understanding of the next.

Incongruity

The reader can recognise a metaphor because it triggers an image, which is seen to be foreign to the context in which it is placed. In order to interpret the metaphor, the meaning of the incompatible element has to be excised and redefined in terms of the contextual meaning. So, amongst the layers of meaning elicited by the metaphor, the reader selects that which is not incompatible with the context. This incompatibility is therefore seen not only as a signal for interpretation, but “is in fact a component of the production itself” (Ricoeur 1979 pg. 183). So, the incongruent metaphor not only elicits interpretation, but its imagery is vital in the formation of the message itself.

The Created Image

The image that springs to mind when metaphor is used involves a psychological process of connotation. External to the narrative, the associated image is in a sense demanded of the consumer, who is forced into the process of mental abstraction. This connoted image allows the consumer to use analogy in the process of interpretation. The creation of this mental image suddenly changes the theory of metaphor from merely being one of *substitution* to one of *interaction*. Metaphor, through this imagery, coheres the verbal with the non-verbal, semantics

with psychology. The metaphor becomes a verbal icon, which provokes a virtual image. It fuses meaning or sense, with the senses (Ricoeur 1979). Once memory encodes the image it is not immediately discarded. The image is kept available “in an interacting position until such time as it deems it irrelevant or no longer useful to a new experience” (Babuts 1992 pg. 90). The capacity of the brain to retain these generated experiences is essential, as no simile or metaphor could work without it. The movement between the generated image and the context, the two meanings generated by metaphor, is a dynamic force in description (Babuts 1992). It is this interaction with the mind of the reader, the forced participation that makes metaphor so powerful. There is nothing passive in the use of metaphor, it requires the driving force of the creator of imagination – the mind.

Interpretation and Meaning

Reading is a suspension of reality, where the reader allows himself or herself to be open to the ideas encapsulated in the text. This suspension and openness allows a “fusion of sense with a wave of evoked images. This fusion constitutes the true ‘iconicity of sense’” (Ricoeur 1979 pg. 210). The verbal element in language functions not only iconically in relation to the sense of the words, but the sense is in itself iconic in its power to develop images. The creation of the image is achieved through the neutralisation of natural reality, and the deployment of imagery is a cognitive process that opens the scope of the work indefinitely, allowing unlimited interpretation. The act of reading becomes an original act of creation, where openness to the text liberates the sense, and creates an imagined world (Ricoeur 1979).

Evoked images are not, however, the “‘free’ images that a simple association of ideas would join to meaning” (Ricoeur 1979 pg. 211). They are ‘tied’ images, in the sense that the iconicity controls the creation of the imagery. The language is shaped and constrained by the author, and so too is the evoked imagery. What is also clear is that the reader at no time substitutes the evoked imagery for the contextual meaning, rather one is ‘seen as’ another, “to read is to establish that X is like Y in some senses, but not at all” (Ricoeur 1979 pg. 212). So, returning to the idea that metaphor is similarity, seeing one idea *as* another creates the resemblance between the two, but does not substitute one thing *for* another.

The verbal meaning of a metaphor joins with the rich, connoted image. This conjunction lives firmly within the scope of language, as it is a definite relationship between signs and signifiers, context and meaning. Seeing something as another allows meaning to function in an iconic manner. It is representational, and this representation can be successful or not. In forced, banal or commonly used metaphors the iconic meaning can fail. In fresh, creative and imaginative metaphor, the iconic meaning can create the unexpected, and “fashion the surprise of discovery” (Ricoeur 1979 pg. 213).

Metaphoric meaning is not an enigma, the clash between the word and its context, but is the solving of the puzzle. Meaning is created not only by the metaphor's richness, but also by the density of the imagined image. And that image is not "a residue of impression, but an aura surrounding speech" (Ricoeur 1979 pg 214). It is the stuff of language, which, as a sculptor forms a work of art, so too the author models internal imagery to create her own construction of the world.

1.2 Summary

The narrative devices outlined in this chapter are the writer's toolkit. Their skilful use frames the level of interaction and integration of the audience's imagination, how they interpret and relate to the narrative work. But they are by no means the only tools that a writer can use. Humour, dialogue, overhead conversations, the narrative use of the diary, and interpretation of the story through the character's thoughts are all traditional devices that can also be used in narrative (Berger 1997). All of these narrative tricks of the trade have to be considered when designing the *story*, the *raison d'être* of the interaction. They shape and mould the narrative tension, enable the creation of believable characters, settings and situations.

But the writer of an interactive narrative has to go beyond using just one set of tools to interact with their audience. The light emitted from thousands of phosphors brings associations with that other monitor screen, the box that has mesmerised audiences since the 1950's. Television employs different methods to create narrative tension, small elements that, when added together make a narrative creation seem real. Born of the cinematic, these methods frame and construct expectations of not only how the medium is used, but also how the audience understands and perceives the world. They form the language of the visual.

Chapter Two: Constructed Realities

“The main problem with realist narrative cinema is its implicit claim that the camera presents to the audience **things as they are**. It makes representation appear as presentation. The narrative suggests that a fixed reality is simply being expressed and that the viewer only has to evaluate the discourses within the narrative, not the narrative discourse itself. It is premised on an incorrect distinction between form and content, where realism is defined as a quality of the subject matter, rather than as a mode of representation” (Davies 1978-79 pg 58).

Something strange happened to the representation of story in the historical progression from literature, through film to television and now the computer screen. Because of the structures and techniques of cinema and subsequently television, a generation now views the world through different eyes. The perception of the world, and the stories generated within that world has been framed in terms of the televisual. When reality is perceived through the camera, the audience has grown to expect a certain methodology to the representation. The audience’s expectations are framed and fulfilled by the various techniques employed by cinematographers, editors, sound engineers, directors and producers to present the world. *The narrative representation of reality becomes lost, and the perception is that what is seen on the television screen is reality* (Davies 1978-79 and Fry 1993).

This acceptance disallows a questioning of the realist representation of narrative. What is forgotten is that realism is a form of representation, that the entire structure of the realist narrative, including its representational form is a construct. Gill Davies (1978-1979) makes the point in the above quote that the *discourse* within the realistic narrative is given much debate by the audience, but realism as a mode of *representation* is not. The two cannot be separated. The way that a narrative is presented to an audience is integral to the narrative itself.

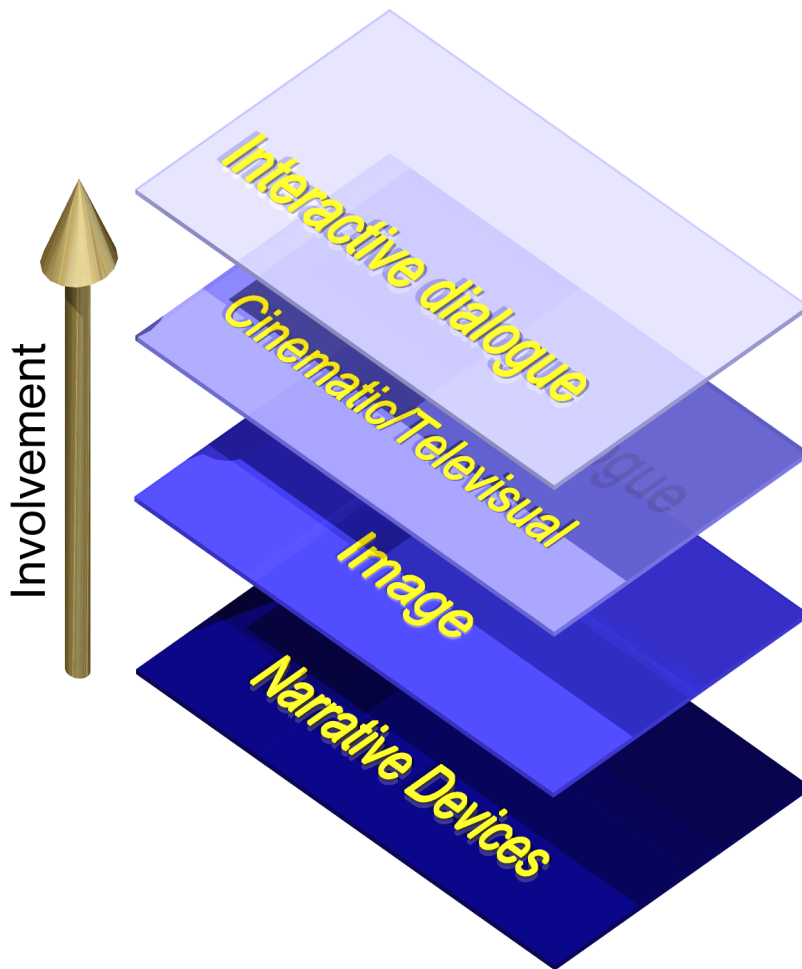


Figure 5. Levels of narrative involvement

Each medium creates its own context for story, it frames the interaction between text and consumer. Each individual media type, be it a novel, a newspaper, a movie, television or computer has its own set of strengths and weaknesses, its own language which communicates its intent to the consumer (McLuhan and Fiore 1967). The medium not only delivers the message, but forms part of the message itself.

The image has a message that it sends to the viewer, its own discourse that is often separate from the actual subject of the picture. The way an image is framed, what it includes and excludes forms an impression in the mind of the viewer as to what that particular portion of reality means. When used in conjunction with story, an image adds an extra layer of meaning to the discourse. If the image has been photographed, be it with a still or motion picture camera, it gives the story a level of authenticity, of believability that it otherwise would not have. The extra layer of meaning is dependant to some degree on the underlying structure and traditional devices of narrative, an image has less meaning when divorced from its narrative context. But the image imparts its own message as well, independent of story, evidenced in photographic art and photojournalism.

Because motion pictures use multiple images in the portrayal of story, the way in which each image interacts with another builds a complex interrelationship of meaning. This adds to the narrative, building richness, depth and adding an extra level of involvement. *The visual narrative tells stories with pictures*. Television and cinema create the impression that they are reality, but they are constructed with a language that is rich in the way it constructs meaning and manipulates emotion. The language that will be discussed in this chapter is the language of the image, and how the techniques and philosophies of the cinematic tradition presented through film and television, frame perception and interaction.

As multimedia is a combination of text, graphic and cinematic techniques, the writer must take into consideration the techniques of traditional media in their approach to the interactive narrative. The interactive writer must be aware of the message that is imparted by the cinematic, as it is part of the craft of creating visual content. The dialogue between human and computer, the interaction creates yet another level of narrative involvement. (See Figure 5.) How this involvement builds on and differs from that of the cinematic tradition will be examined at the end of this chapter.

2.1 Image vs. Reality

In literature the narrative world is created by the author using description to create a connoted image in the mind of the reader. This image uses words and phrases that enable the world experience of the reader to contribute to their interpretation of the text. Each narrative experience is therefore unique to each reader.

The same could not be said of the cinema. The evoked world is explicit, showing (mimesis) rather than telling. Because the image is so realistic it is read as a presentation of reality rather than a simile. But every aspect of the cinematic/television experience is constructed. From the dialogue or information imparted, to the choice of shot, sound, setting and characterisation.

Each story brings with it the expectation of traditional narrative structure, the beginning, middle and end. In screen narrative there is usually closure, the ending, be it happy or sad. But life seldom reflects the story. The only real closure in life, is death, otherwise the story of a person's life is ongoing and continuous. The repeated realistic reflection of life in cinema and television starts to frame the audience's expectations from life itself.

But the differences between screen imagery and reality start with how reality is perceived how people see their relationship with the world. The media reflects the social attitudes and

conventions that prevail in its time. The screen mirrors reality, and it is the shock of recognition, the empathy that the audience feels with the characters and situations portrayed within the narrative, that leads them to believe in the constructed reality. The narrative structures repeatedly used in screen representations influence expectations and behaviours in life.

2.1.1 The Screen Dimension

But at the same time, because of the mode of representation the audience is aware of the construct. The screen itself is not reality, even if what is being represented on it seems to be real. The way the audience receives the image, and how film and television alter perception, can be used as narrative devices within the discourse. Because screen representation is not reality, the skilled filmmaker can manipulate the way that the image is perceived by the audience. *These distortions of reality form the beginnings of a visual language, used to create narrative content within the visual realm.* The two act together, the story and the visual, to form a complete narrative experience.

The obvious difference between the screen and reality is how the image is received. Images seen on the screen are the projection or emission of light on a flat surface. In the case of film, light is projected onto a screen, and is reflected back to the audience. On television or computer screen monitor, a beam of electrons is rapidly fired in a cathode ray tube, onto a screen, which is coated with phosphors of red, green and blue. These phosphors glow when hit by the beam, and the resultant coloured light is emitted from the surface of the screen. The human eye makes out images from the millions of dots created by the glowing phosphors on the television screen (Berger 1997). Both the cinematic and television screens are therefore two-dimensional, even though what they represent often appears three-dimensional. Humans see the world in three dimensions because of the slight difference in distance between the eyes. Each eye creates an image from a slightly different angle, which gives the impression of depth. This is called binocular disparity. The human eye is able to interpret the relative depths of two points in space from the differences between each image as it is received on the retina. The disparity of the image from each eye creates the depth cue (Interrante 1996). There are other optical effects that create depth cues in humans, but detailed examination of the human eye is beyond the scope of this work. Because screen images are intended for more than one viewer, it is impossible to replicate this slight offset in to a mass audience without the use of special red/green or polarized glasses, techniques that have so far achieved only moderate popular success. The result is that film and television is neither entirely two dimensional, nor is it entirely three-dimensional (Arnheim 1958).

As a result, the camera flattens the visual depth that is interpreted by the human eye in real life. Perspective distortions that are adjusted for by the brain remain distorted on the screen. An example of this is when a person reaches out their hand to touch your nose. The hand fills your

vision, looming disproportionately large. However, the hand always seems to be a normal sized hand. This is called consistency of form and does not hold true on the screen. When a hand stretches out towards a camera, it appears to be a giant hand, because there is no third dimension, no extra eye to give the image correct proportion (Arnheim 1958). Size and shapes therefore do not appear the same on the screen as they do in real life. *This distorted perspective can be used as a narrative device, to portray objects and people as being larger or smaller than they actually are.* The relationships with a subject's foreground and background can also be manipulated, depending on camera angle, zoom setting, and the distance between the subject and the camera. As an object moves further away from a camera, its relative size becomes smaller. If one knows the relative size of an object, one can tell from its size in the shot where it is placed in terms of depth (Interrante 1996). However, these depth cues can be deceptive if there is no visual reference point. The camera may capture an image that physically exists, but the director and cameraperson can consciously manipulate the placement of that object in relation to its environment and the viewer's eye. The relationships between objects, rather than the actual size of the object create relative size itself. This is true of any two-dimensional image and is not confined to the cinematic arena.

Another issue to do with screen representation is the conceptual displacement of the eye from the rest of the body. In the real world, the movement of images in relationship to the viewer's eyes relates to the physical placement of their body and its environment. On the screen, this is not the case. Images move independently of the viewer's eyes, and this can cause a dislocation in perception. If a shot is taken with a camera moving very rapidly, the audience can feel giddy, due to the disjunction between the viewed world and the static situation of their bodies. Because of the separation of the eye from the body, the portrayal of movement can be deceptive. If the camera begins to move, and the viewer is not given a reference point, then it appears that the objects within the frame are moving. The presumption taken by the audience is that unless given visual cues to the otherwise, the camera is static. An example of this effect is a shot of a car, which is being filmed by a car overtaking it. If the viewer is not given a visual cue, the first car appears to travel backwards. This is overcome by including the bonnet, or some reference point in the foreground, so the audience can relate the movement of the objects in relation to each other (Arnheim 1958).

The screen image is also quite limited in terms of field of vision. In life, there are no limitations on a person's field of vision, by turning, they can encompass a three hundred and sixty-degree view. This is not so for the screen. The edge of the screen cuts off what can be seen beyond. However, the viewer is still aware of their own range of sight, being able to see their own environment encasing the screen. Even in the cinema, with its large screen format, the theatre itself impinges on the audience's reality, dislocating the viewer from the screen image. The represented narrative is therefore seen in the context of the cinema (or the living room), creating an emotional distance

from the events portrayed. It is a narrative reality seen within the context and constraints of the real world experience of the viewer (Arnheim 1958).

These differences in visual perception of the image can be used in the portrayal of the story. Although camera distortions, form and movement all appear very different on the screen than they do in real life, the differences can be emphasised, and used as a creative tool in the visual medium. The perspective distortion of the giant hand can create the sense of an unstable mind, distorted perception, or even the impression that the owner of the hand is a giant himself. Changing the spatial relationships between the actors and their environment has been used in numerous movies and television series, such as "Dr Cyclops" (1940) where changed size relationships were used to create the visual impression of the characters being tiny. This visual distortion when used in conjunction with giant props, sets, animation, back projection or chroma key can be quite convincing.

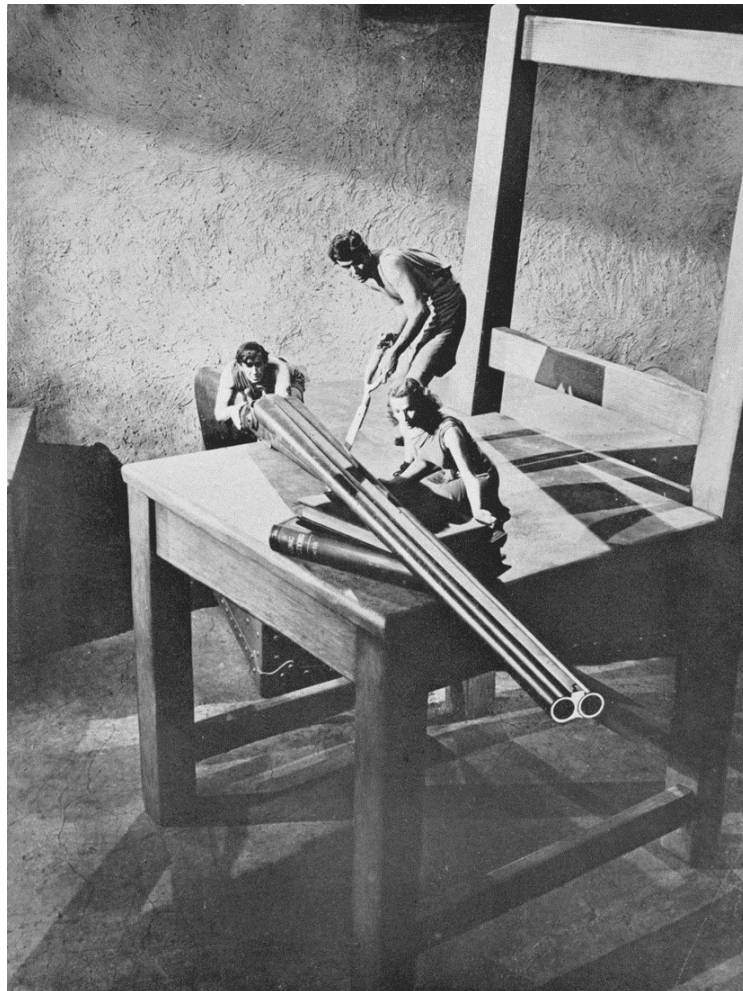


Figure 6. Dr Cyclops (1940) Ernest Schoedsack

Creative filmmakers have manipulated even the psychological distance of the audience from action. The use of the second person viewpoint challenges the audience directly from within the narrative.

But the distorted realities due to the differences in visual perception are only one difference between reality and the construct. There are other methods that have evolved through the history of cinema that create the language of film, elements that form the grammar of the visual.

2.2 Visual Grammar

The language of film, or its visual grammar, shapes the viewer's expectation of the visual representation that will be found on the computer screen. It does so in the same way that theatre, photography and art framed the expectations of what could be presented in early cinema. The language of film developed from the old into a new art form, in exactly the same way that the language of interactivity is currently evolving. Visual grammar makes up the elements of the visual narrative, and can be analogous to the verbs, nouns and adjectives of the written word. Visual grammar is how story is constructed with image, how the various elements act together to create a visual story. The form of visual language is discussed here in terms of the cinematic tradition, rather than that of iconic based computer-programming languages.

The visual grammar evolved, along with the technological advances made in photography and cinema, at the end of the nineteenth and beginning of the twentieth century. It is generally accepted that the brothers Lumiere developed the first motion picture camera in 1895, but they did so in an environment of innovation, where many inventors were rushing towards the same goal. Artistic freedom in the cinematic was unleashed through technological innovation, through developments in projection and camera technology. Motion picture cameras became smaller and more mobile. "The language of cinema developed as a function of the message and the machinery" (Whitaker 1970 pg. 15).

The message, at the turn of the 20th century was *motion*. Actors were able to move within the picture frame, and the camera itself could be moved. For the first thirty years of film, stories were expressed without recorded sound, due to the lack of proper audio recording media and synchronisation between image and sound. The silent era reached its heyday, and the need to create a cohesive story structure without the use of sound allowed the visual grammar to develop. "Much of the diegesis concerning actors and events in written narrative was gradually subsumed by *technique* in film, for which every angle and shot had psychological implications" (Marling 1993 pg. 182).

Constructed Realities: Visual Grammar

This thirty-year silent era gave the projected moving image dominance over the aural, and today the grammar of film is couched mainly in terms of the visual, with sound used to reinforce, heighten or explain action (Whitaker 1970). Sound did, however develop along with the visual, with sound being used to create auditory depth within the story. The 1930's saw the development of the auditory cut, where the sound perspective followed the depth cues given by shot. Therefore, sound volume came to be in rough proportion to shot size (Marling 1993).

The language of the visual fully exploits a story's narrative content. The way that mise-en-scene, shot size, editing, depth of field, lighting, movement and sound work together to form a cinematic whole, builds the film's visual aesthetic. Martin Scorsese (1995) called filmmaking "visual poetry", and it is the visual grammar that forms the nouns, verbs and adjectives of that language.

Technology is also framing and moulding today's multimedia experience, with advances in processing power, hardware and software helping to determine the evolving language of interactivity. Each advance redefines what can be done on the computer, and expands creative possibilities for multimedia producers. The language of the visual is yet to be fully exploited in interactive multimedia, as changes in technology constantly redefine the interactive narrative's production. By examining the traditional grammar of the visual, its techniques can be considered and adapted to the conceptualisation and creation of the interactive experience.

2.2.1 Screen Space

While it may not be immediately apparent, the size and shape of the screen can actually affect the representation. The aspect ratio of a computer monitor and television screen is 4:3. The screen shape can proscribe the framing of objects, actors and sets within the screen. For example, the medium close up fits extremely well in the 4:3 format, with the body mass of the person filling the bottom third of the screen, creating a strong triangular composition. The regular film aspect ratio is 5:3, which allows many films, without too much manipulation to be translated to television. However with the development of the cinemoscopic screen, where the aspect ratio is 7:3, filmmakers struggled with editing such a panoramic format. The shape of this cinemoscopic screen lends itself to the wide shot, and as every film editor knows, creating a smooth transition is very difficult when cutting two or more wide shots together, especially if the shots are of action contained in the same scene. Filmmakers overcame this difficulty by enframing action within other boundaries, such as doorframes, thus establishing a different aspect ratio for the scene, or using enormous close ups, which broke up the wide shots (Scorsese 1995). The aspect ratio determines the amount of screen space the director has to encapsulate the action, and provides field of view into the cinematic world.

Constructed Realities: Visual Grammar

The screen frame defines what action can take place within the scene. Actors can walk into and out of the screen space, placing themselves within the frame, but also implying the unseen places outside the frame. This is called *mise-en-scene*, the literal translation from the French, is “placed in scene”, and deals with the placement of action and use of the screen space. The connoted space, that which exists outside the frame, can be expanded using movement and sound. A conversation with an out-of-frame character creates a sense of a world beyond the frame. And whilst the frame constrains, strategically placed reflective objects such as mirrors, create a space outside the frame, a window to the world that exists outside, allowing the connoted space to become more ecumenical.

How large an object appears is dependent on three things. The distance of the camera from the object, the zoom setting, and also how much the image has been enlarged when the film is displayed. The screen in a movie theatre is larger than that on a television screen. This difference in size changes the audience’s relationship with the image. If a member of the audience is sitting very near the cinema screen, movement will appear to be more rapid than if the same image appears on a TV screen. Details too are more easily described in the large-scale format than the smaller screen (Arnheim 1958). So the impression or impact of the story can differ depending on the delivery medium, the larger and closer the screen, the more encompassing the evoked world, until distortions due to viewing angle become an issue.

2.2.2 The Shot

The shot is the fundamental element in television. The shot encompasses how the camera follows the narrative action (Berger 1997). A shot can be defined as an uninterrupted piece of footage, which can be of varying duration. Most of the visual content of a film resides within the shot, be it lighting, camera angle, action or design (Whitaker 1970). A shot exists until it is interrupted with an edit, or some other sort of visual transition, be it a fade through black, a wipe or a dissolve. The shot encapsulates the action, constrains or widens the audience’s view of the scene. There are three main determinants in the shot, camera angle, shot size and depth of field.

Camera Angle

Where the camera is placed in relation to the objects and events is crucial to visual language. On the vertical plane, a low angle shot is when the camera is placed lower than eye level. The lower the camera is placed near the ground, the more looming and dominant the people or objects within the shot become. If the shot is of a skyscraper in New York from the ground, the perspective points converge, and the lines of the building appear to angle towards the vanishing point, the building appears to tower over the viewer. Camera lens distortion can add to the effect,

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if a fish eye lens is used, adding curvature to the vertical lines. If the shot is of a person, and the camera angle is low, he appears to dominate. When the difference from the eye level is small, the person initially may appear slightly taller than he actually is. As the camera is positioned lower to the ground, the person appears to loom, threatening, dominating the viewer, until finally the viewer is looking at the scene from a child's point of view, where the whole world appears to be large and overbearing.

A high camera angle diminishes an object. The higher the camera is lifted on the vertical plane, the smaller and shorter an object may appear, until, at the most extreme, the object appears ant-sized on a broad field of view. The effect is to make the subject seem small, insignificant, their place in the world diminished and irrelevant. The camera looks down on the object, the angles and perceived height become foreshortened, and the object appears smaller and flatter than it actually is.

On the *horizontal* plane, the camera angle is the relationship between objects or people, and the camera lens. Camera angles may make a person appear closer to another than they actually are, or the space between them may be made to appear large, depending on camera placement. Camera angle on the horizontal plane means moving the camera to a different place, and evaluating the aesthetic effect of the new angle in relation to the objects being filmed. When camera angle and placement is used in conjunction with lens size, the size relationships between people and their environment can be manipulated. The foreground can be made to dominate, likewise the background, and the spatial distance between foreground and background can be altered. Lens size and camera placement affects the field of view, a shot of an object may be the same size, but its relative size and distance from the objects surrounding it can be very different depending on camera placement and the choice of lens size.

Choice of camera angle and viewpoint can be crucial in the interactive environment. Camera angles deal with the spatial relationships between objects. The very same ideas are relevant if the material being used is photographic or some form of 3D modelling. Camera angles, spaces between objects and dominance all play a role when establishing relationships within a constructed image. The apparent depth of an image is a function of camera angle. Camera angles help to convey meaning in the image, forming the relationship between image's foreground and background. Camera angles portray dominance, the relationship the viewer has to the image, and the balances within the image itself. They also convey emotion, where spatial distances between objects can be distorted. Clever use of camera angle is a powerful tool in the visual language.

Shot Size

Shots also depend on the size of the objects within the frame. These have been generalised into the wide shot, the medium wide shot, the mid shot, the medium close-up, the close-up and the extreme close up, known in the trade as WS, MWS, MS, MCU, CU and ECU.

The wide shot is used for exposition, allowing the audience to gain a spatial understanding as to where the story is in relation to its surroundings. The wide shot sets the scene, and gives the audience a chance to look around, to place themselves. Wide shots are used for three specific purposes: at beginning of a story, to explain a change of scene, and at the conclusion of the story. One way of introducing a story is to start with an extreme wide shot, and either zooming in or editing to successively closer shots until the characters or locations come into view. This is called an opening sequence, and forms part of the narrative exposition. The wide shot also explains the transition between locales, placing the action in a new physical location. It is description, enabling a separation between scenes. Also used as closure, the wide shot can mark the end of a story, drawing the viewer away from the action, a visual summary of all that has come before.

The medium wide shot is not a broad sweeping vista, as is the wide shot, but is usually used to place a person in their surrounds. A medium wide shot will show the whole of a person's body, from the tip of their toes to the top of their head, with plenty of room for them to move within the shot. Not restricted to the use of people, the medium wide shot can be used to describe any object within an environment. But the view is not all encompassing, it focuses the eye on a dominant form, it bears the same relationship as the paragraph does to a page. It has a central idea behind it, which draws the attention to a general concept.

The mid shot, where a person is the subject, has the bottom of the frame cutting them off anywhere between mid thigh and waist. A mid shot will allow a person to move within their environment. They are the central points of action, the focus of thought. A mid shot can encompass two people, if neither one dominates in terms of size. If one person dominates, the term used is more likely to be the medium long shot. If the object being filmed is not a person, the object should only fill less than one half of the frame horizontally.

The medium close up is the most favoured shot in television. It is jokingly called in the industry "the mammary cut off", with good reason. The medium close up has the bottom edge of frame just below the breasts. In the MCU, the person being filmed dominates the screen. In the television 4:3 format, as mentioned before, the subject's shoulders fill three quarters of the screen, with the head falling neatly on the upper third. It is a very good shot size for television, and as such is somewhat overused. It allows enough space for head turns and movement, but it constrains the field of view. The MCU personalises the relationship with the subject. It is not too intimate, nor

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too distant. (Berger 1997) In the USA and Australia, most newsreaders are framed with an MCU. The tradition in Europe and Asia is to frame the newsreader wider, in a medium wide shot. The medium close up emphasises the face, but allows breathing space, a small amount of room in which to perform limited action. The MCU, if a character is not formally addressing the camera, should allow looking space, with the head positioned so that it has space to look outside of the frame. Panning the subject slightly so that the back of the head is slightly closer to one side of the frame does this. This allows extra space between the nose and the farther edge of frame, the space for discourse.

The close up fills the screen with a person's face. Usually, in the 4:3 format, this means that their chin is in frame, but their upper forehead falls out of frame. The close up emphasises emotion, it intensifies every muscle, every hint of inner thought. Because it is so good at portraying emotion, the close up is usually used at times of extreme tension. It is an intimate shot, allowing the viewer to see minute facial reactions from the actor. The close up is also very effective when used on non-facial objects. The nervous hand, the gun, the ticking clock. It intensifies an idea, empowering it with emotion that otherwise would be diluted. It is the extreme emphasis in dramatic action. It is the moment of stillness before the gun fires, before the telephone rings. It is the drop accumulating on the edge of a tap, before inexorably plunging. The close up is a single focussed thought.

The extreme close up is intensity taken to the limits. It frames a person so that the edge of frame cuts off their chin just below the mouth, and their forehead just above the eyebrows. The extreme close up allows no space for movement on the part of the subject. The emphasis is on the eyes. They sit on the compositionally correct upper third of the screen in the 4:3 format, and can be extremely disturbing. This shot is used at times of absolute stress, where narrative tension is at its height. It allows the audience to inspect every muscle movement, every blink of the eye. Because this shot size is so powerful, it must be used with care. The emotion behind the subject matter must justify the use of this shot.

Depth of Field

Depth of field is that part of photography that deals with focus. The eye, when it looks at an object, places that object in focus, while that which is not being concentrated on is blurred, or out of focus. Strictly speaking, depth of field is the area within the shot where objects appear in acceptable focus. Depending on the choice of lens (an issue complicated by the zoom lens) and the distance from the object itself, this focal depth may vary from a few centimetres to many metres.

Why does this matter? A shot with a long depth of field will place objects in the foreground *and* background in focus. This is called deep focus, and was used in the 1940's as a method to portray

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realist cinema. Spatial unity within a scene was maintained with this technique, an entire event could be shown within a scene without the disruption of the edit. The deep focus thus enabled unity of action within a single shot (Wollen 1969). A shot with a shallow depth of field places the object in the foreground in focus, whilst the background becomes a blur of colour. This serves two purposes. Depth of field can constrain the view, but also it maintains the viewer's attention on the object of interest.

Differences in focus allow the viewer to interpret the image as having a disparity in relative depth. Experiments performed by Pentland (1985) verified that people perceived a separation in depth between objects if there was a larger gradient of focus between them. So depth of field provides spatial cues of the relative distance between objects (Interrante 1996).

Depth of field is also used in cinema and television to place emphasis on a character. It's a technique called "pulling focus". If two people are in shot at different distances from the lens, person one is in focus, and person two is out of focus. Person one speaks, and as the other responds, the focal plane is shifted so that person two is thrown into focus, while person one goes out of focus. It's a technique that creates narrative interaction between characters. The focus shifts in relation to the importance of the discourse. Important issues or revelations correspond with the increase in focus on the characters, what the person is saying when they are in focus becomes a narrative focal point also.

Depth of field is an issue that is not used very often in multimedia to date, but it is worth examining, as it can place a narrative emphasis on particular locations, people and events. Depth of field determines how far the viewer can see into the picture, and how clearly they see it. Many 3D modelling applications do not operate with depth of field in their rendering, they instead place the entire scene in sharp focus. While this creates freedom in the generation of the images, it is important to realise that depth of field is a narrative device, as well as a photographic one, and clever use of depth of field can add realism to the story. Depth of field can be used to constrain and conceal, as well as to focus attention.

2.2.3 Camera movement

Movement in a cinematic production is not limited to characters moving into and out of a static shot. The camera and elements within it can be moved to create the sensation of movement. Camera movement, if it is to be effective, must follow narrative structures in its execution. Each camera movement should have a beginning, middle and an end. There should be motivation for movement, and a comprehensible message that is being delivered throughout the movement. For example, a movement that has a beginning and an end should also reveal understandable images in its middle. The movement should be as interesting, comprehensible and revealing as the point

from where it starts or concludes. A camera movement should encompass a completeness of action, where the shot comes to a natural conclusion on or near the edit point. These rules, of course, are made to be broken, but in film and television, they are only broken for valid narrative or visual reasons.

Camera movement takes on a different meaning depending on the narrative viewpoint the camera is representing. First person camera movement tends to create either a dream like quality to the story, or can be used to convey furtive, stealthy intent. It always has the sense of unreality about it. The third person viewpoint is more common in cinema, and is used in conjunction with movement to reveal aspects of the narrative, be they the environment, direction or motivation for action.

If the camera moves in, it is the same as the narrator saying "Pay attention – something important is going on, some detail is going to be made known to you" (Berger 1997 pg 113). If the actors move towards the camera, they appear to become larger, more powerful. If the camera is moved upward, the actor or object appears to become less important, made insignificant by the bird-like view. It makes the viewer feel more powerful. If the camera is moved downward, the actor leers over the audience. The viewer is made to feel insignificant, small (Berger 1997). Each movement creates a narrative dynamic, which is conveyed to the audience.

The Pan

The pan is a horizontal movement, where the camera is moved in a clockwise or anti-clockwise position around a central vertical axis. The movement of the pan can follow action or can move across a field of still action. There should be motivation for movement in the pan, some sort of narrative reason for the action. The pan usually starts and ends with a still image, so the shot encapsulates the beginning and goal of the movement. The goal of the pan is to reveal new information, and as a result the viewer's eye is drawn towards the side of the shot that is unveiling the as yet undisclosed image. The eye tends to disregard the tail edge of the image. The excitement is in the suspense of what is about to be revealed (Whitaker 1970).

The pan is a little unrealistic in its execution, because, in life, images are not panned across a field of vision, rather the eye focuses on individual areas of interest, a sort of conceptual cut between views, often broken up by blinking (Whitaker 1970). The pan is often used as a linkage between different aspects of the same scene and is used to reveal information or distances between objects.

The Tilt

Cameras, although customarily set level, can also be tilted so that the bottom of the camera is no longer level with the ground. Traditionally, a tilt is when the back of the camera is raised or lowered so that camera lens is either pushed upwards or downwards, pivoting on a horizontal axis. This is a vertical tilt. The camera remains anchored in a fixed location but is levered around a central point. The result is that the field of view moves either upwards, so that the sky becomes visible (or ceiling if the shot is indoors), or alternatively, the view moves towards the floor.

The tilt alters the angle at which the image is photographed, so that objects may appear to dominate the field of view, depending on the direction of the tilt. The vertical tilt can be thought of as a vertical type of pan, but it also alters the camera angle of the shot (Whitaker 1970).

Tilting can also occur along the camera's length, where the camera is rotated so that the horizon appears to be at an angle. This type of tilt is more likely to be used in hand-held situations, where the cameraperson can rotate the camera off axis. Camera cradles can also be used to create this effect. This tilt upsets the viewer's normal relationship with the world, and can cause a disorientation in the relationship between "up" and "down". The horizon is no longer fixed, the expected angles of the world are reoriented. The distorted angles of longitudinal tilting can be used with great effect.

The Dolly

In the dolly shot, the camera itself is moved forwards or backwards from the object, in a smooth movement. In film, the "dolly" is a four-wheeled platform upon which the camera was mounted. It is pulled by a "grip", a person who smoothly pulls the dolly (with camera and camera operator on board) to its final location. This smooth action takes some skill. Nowadays studio television cameras are mounted on wheeled pedestals, which are pushed by the cameraperson to achieve the same effect.

The dolly-in starts from a wide field of view, and the camera is pushed towards the subject, concentrating attention on one element within the frame. Because the centre of attention never actually leaves the frame, its result is to concentrate on the object within the wider context of its environment (Whitaker 1970). The movement towards the subject intensifies the shot, heightening interest in the subject. Because the actual distance between the camera and the subject changes with the dolly shot, it is necessary for the cameraperson to change the focus as the movement occurs.

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The dolly-out initially places the object within the frame, then widens to reveal the surrounding environment. The effect of this can be to locate the action contained within the tighter shot onto a broader context. The shot becomes wider, allowing movement on the part of the subject, easing the intensity of the image.

The Zoom

The zoom has a similar visual effect to the dolly, in that it moves the field of view closer or farther away from the subject. But it does this through magnification, rather than camera movement. The zoom is slightly unrealistic in that it creates the visual effect of the viewer gliding through space in a way that does not conform to how movement happens in real life. The objects near the edge of frame seem to slip past, rather than entailing any sort of movement through space. The zoom changes the lens angle from a wide-angle lens down to a narrower one, and as a result the depth of field shortens, often throwing objects very close to one another out of focus (Whitaker 1970). One way of overcoming this is to zoom in to the point of interest first, focus the lens, then zoom out to the wider field of view, before actually undertaking the zoom movement proper. This avoids the need to pull focus while zooming. This technique ensures that the shot at the end of the zoom range is in focus at the conclusion of the camera movement.

The zoom is often used as a replacement for the dolly, but because the angles between objects do not change in a way that reflects real movement, it has a different visual relationship to its environment. However, the zoom out, when used in conjunction with the dolly-in, can create a dynamic relationship between the subject's background and foreground, where the background seems to rush forward, compressing the spatial distances and dynamically changing the depth of field. Alternatively the zoom-in, when used in conjunction with the dolly-out, can dramatically increase the spatial distance between foreground and background, isolating the subject from its environment.

The Crane

The crane shot is created by mounting the camera on a crane, which enables the camera to be moved upwards and downwards as well as being able to dolly in or out. The crane shot enables dramatic panoramic views to be narrowed down to a highly focussed point of interest. This is called a "crane-in". The crane-in usually starts with the camera high in the air, at a distance from the subject. The camera is then smoothly moved downwards towards the point of interest, as the cameraperson maintains shot and focus.

Equally the crane can be used to diminish a subject, making them small and insignificant in relation to their environment. The “crane-out” starts with the camera close to the subject, and it is then moved backwards and upwards, diminishing the subject and raising the camera angle, whilst broadening the field of view.

2.2.4 Lighting

Different lighting angles can give quite different impressions of an object’s three-dimensional form. Lighting can make an image appear flat, or rounded, depending on the incident angle between the object, the light source and the point of observation. Because in cinema and television, the viewer does not control the screen image – in that the cameraperson, not the spectator controls any movement around an object – lighting is crucial in determining its shape and form.

Lighting determines the shading of an object. When looking at a two dimensional representation of an object, shade cues are sometimes the only information available to determine shape. Shading depends on many factors, including the incident light, the material properties of the object, and how the material is able to absorb, transmit or reflect that light (Interrante 1996).

Lighting also gives the impression of depth. If a brightly-lit object is placed against a dark background, it appears to stand out from its surroundings. If it is placed against a similarly lit background, it blends in, seemingly closer to the background. The shadows cast by an object create a spatial relationship to its surroundings. Shadows may fall on the ground, or upon nearby objects, allowing the viewer to create an understanding of the apparent distance between the object and its environment. The use of shadow enhances the three dimensional appearance of a scene (Interrante 1996). Objects that cast shadows have a physical presence, and the way that light plays on their form determines their textural qualities. Lighting provides a physicality to three-dimensional objects that is not lost in the translation to the two dimensional screen.

Lighting creates the mood of the visual narrative. The use of light can describe not only the visual environment of the story, but also the emotional environment. Coloured gels can give the same set a completely different feel. Red and brown gels give the impression of warmth and an earthy feel to a set, whereas blues can make the room feel cold. Yellow makes a room look stark, whilst green can give an eerie effect. “Depending on the lighting, a room may look warm and comfortable, or cold and bare, large or small, clean or dirty; it may be striking at the first glance, or quite mediocre and insignificant” (Arnheim 1958 pg. 66). A combination of gels in one scene can add a vibrancy and richness to an image. Lighting changes denote a change in mood, or the passing of time, a technique often used in theatre, and subtly used in cinema and television.

The use of light and shadow also dramatically changes the feel of a scene. Dark shadows highlighted with stark bright lights create a harsh, uninviting feel. The shadows intimate hidden secrets, things lurking, unrevealed. Whereas a flat flood lighting can be somewhat bland and two-dimensional. Soft scrims enable the objects within a scene to be modelled, with a smooth gradation between light and dark. The lighting controls the narrative environment. The style of lighting used for each story is determined to some degree by the narrative content. A well-lit scene will support the action, will provide a continuity of mood and look within a film or drama series.

Genre can also proscribe lighting to a certain degree. The horror film relies on the unseen, and as such uses the night and shadows to conceal and constrain the screen environment so that the terror is maintained. The horror film conceals more than it reveals. It feeds as much off the imagination of the audience as it does off the horror contained within the script. The audience is rarely given an opportunity to fully assimilate the entire environment, and as a consequence they imagine evil behind every shadow. As a result many horror films play with layers of shadow, with sharp highlights catching forms moving in the darkness.

Film noir, a genre that existed in the 1930's and 1940's similarly used shadow to evoke a mood. But in this case shadow did not represent the terror of the unknown, but the stark inevitability of fate. Film noir did this as much through the visual as it did through the plot (Marling 1993). The look of film noir, due to its historical context, was black and white, but it used high contrast film, and deep shadows, emphasising the separateness between character and environment. Shadows played as important a role as the harsh lighting, used to conceal motivation and reaction. A character, whose face remains in shadow, talks on the telephone. A classic film noir image.

The romance, by contrast, does not generally use the shadow. The lighting here is soft, its purpose is to portray an idealised reality. It is optimism; the romantic possibilities of life reflected in the over saturated colours, soft focus and even lighting.

In the western, the harsh sun is counter balanced by the half-lit interior. The brightly-lit saloon serves as a visual indulgence against darkened night street. Light and dark, good and evil, the visual language imitates the themes found within the narrative content.

Lighting is a unifying force in the film and television narrative. It provides continuity in look and feel within the story, creating the mood and atmosphere of the screen environment. Lighting can make a character look beautiful or harsh, haggard or proud, depending on the type of lights used and the skill of the lighting director. Illumination describes the scene's scope, how far the audience is permitted to see, and the form and shape of the objects in the set. It is lighting that gives the impression of the third dimension and creates a believable space for the narrative discourse to take place.

2.2.5 Editing

The editor works with two goals in mind. One is the smooth transition between shots within a story; the second is to create a rhythm and pace, a sense of cohesion throughout the narrative. The two are not mutually exclusive. The larger pace of the story has to be taken into consideration when deciding each individual edit. Thus the editor imposes his or her own internal rhythm to any motion picture, pacing the action so that it makes sense within broader context of the piece.

It is the editing that combines the narrative content of the story with its visual language. Each shot, each angle, each movement, sound and cut is used to reinforce the plot, themes and motifs throughout the story. Equally the editing drives the story onwards, creating its dynamism and fluidity. The difference between fast paced action and a scene that seems to drag, may be merely a matter of one or two frames between each cut.

The edit determines what is seen in each scene and for how long. Screen time, through editing, can be compressed, or expanded, depending on the requirements of the script. Editing disrupts the space-time continuum, by interrupting the flow of time at any point. In life, the observer moving towards the object of interest bridges the temporal distance between a wide shot and a close up. An observer cannot instantaneously jump from one temporal and physical location to another. This is not so in film and television. A scene can be interrupted at any point, the point of view can shift to a new physical and temporal location at any time (Arnheim 1958). But this has to be done within the logical context of the story. Editing draws the narrative threads of the story together into a whole, using the visual language, rhythm and pace. An edit that does not fit with the overall pacing of a movie will jar the audience, unnecessarily drawing attention to itself. Unless it is used to reinforce an aspect of the story, editing should be transparent, allowing the narrative action to seamlessly move onwards.

Editing creates sequences from separate camera shots, images of the same scene, the same action, taken from different shot sizes and angles. The editor will create a complete whole from the different parts. The scene is the smallest element that contains Aristotelian completeness of action (Whitaker 1970). Creating narrative tension is part of this process. Scenes often start with a wide or medium wide shot, with the shot sizes becoming tighter or looser depending on the narrative tension within the scene. This is necessarily a cooperative process, a joint task distributed between the cameraperson, editor and director. In directing the action, the shot sizes and emphasis have to be planned and filmed before they reach the editing room.

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The motivation for an edit is movement, sound, or the natural rhythms present within the scene. Cutting on action is one way of creating a completeness of movement within the scene. Because the movement distracts the eye, an edit becomes part of the action itself, and entails fluidity in its execution. Cutting on or around an aural punctuation point can help to create a visual pace that matches that of the sound, particularly if the cutting is to music. But perhaps the most difficult edit is when the complete action within a scene is used to define the edit points. This rhythm is independent of individual movement or sound but works within the scene dynamic itself. The editor rough cuts the entire scene together, then refines the edit points until the pacing of the edits fits the scene's entire narrative structure.

The meaning of a shot is created by the context in which the shot sits. The "expression perceived on an actor's face – grief, joy etc – is determined by the shots which precede and follow it" (Wollen 1969 pg 40). This context-based perception by the audience was discovered in the 1920's by the Russian filmmaker Kuleshov, who conducted a series of experiments at the State Film School (Wollen 1969). This is how, in the final edit, an emotional dynamic not readily apparent in the rushes can be created in the editing room.

The Cut

The editor uses a collection of methods to compile the story. The most basic tool is the cut, where one shot is instantaneously exchanged for another. Originally this was done by physically cutting the film and sticking together a new piece of film with the old, hence the term. The cut enables one shot to be seen within the context of that which preceded it. A scene may also be intercut with another, where different parts of a scene are interspersed with that of another "as one might shuffle together two decks of cards with different back designs" (Whitaker 1970 pg 51). It's a sharp transition, one image instantly exchanged for the other. The cut is essentially a neutral in terms of visual language, but its rhythms can be used as an emphasis or counter point to the action.

The Dissolve

The dissolve allows a second shot to visually emerge from the first, replacing it on the screen (Whitaker 1970). The dissolve connotes a change, be it of time or locale. It is a gentle transition, allowing the viewer time to assimilate the new location. It separates one shot from the next, conceptually forming a narrative bridge between topics. Depending on the speed of the dissolve, the two shots can interact with each other, allowing the audience to appreciate visual linkages between the two. Colour, shape and similarity of form can all be used to great effect with the dissolve. The dissolve naturally ends one shot, before another takes its place, it is the soft ending.

The Fade

The fade is an editing device, which is most often used in movies, rather than television. It is usually a gentle dissolve through black to the next shot. It denotes not only a movement through time, but also a completeness of action. The fade through black allows the audience to infer action, such as two lovers falling on to bed, fade to black. The inference is that they have made love, but this has not been shown. The fade releases the audience from the narrative tension, allowing breathing space, and a creating a new canvas on which the action can be played. Often when the fade is used, audio remains underneath the darkened image, linking the narrative passages together (Whitaker 1970).

The fade does not necessarily have to be to black, the fade to white or any other colour can also be used. The fade to white focuses the audience's attention on the screen, a punctuation point. A very rapid fade through white is an effective device used to connote a camera flash. Fades to colour are not often used, but can be very effective if carefully constructed. For example, a fade through red can denote a murder, the red representing a wash of blood.

Fades can also be achieved through chroma key or luminance key effects, where one image becomes superimposed into a particular colour, or luminance value within a shot. Keys are also used to place layers of images on top of each other, used to visually composite images that were not filmed in the same location or at the same time. Luminance and chroma keys can be explicit, or can be subtle in their execution, and remain undetectable to the audience.

The Wipe

The wipe is an editing device that is overly artificial in its execution. A wipe draws attention to itself, usually consisting of a sharp edged shape replacing one shot for the next. It has no referent in natural vision, it is a device used within the realm of the film and television. Wipes do not have to have a sharp edge, their edges can be blurred, and coloured borders can be added. They usually denote a change in locale, the "meanwhile" in a story. A screen may be divided in two with a wipe, traditionally used to show two sides of a telephone conversation. This has the effect of splitting the screen into two images, with dialogue directing the viewer's eye from one subject to another. The wipe should be used with care, because of its artificial nature (Whitaker 1970).

Variations of the wipe are the digital morphing and three-dimensional transitions currently used in television. These can vary from the simple page turn, to wildly transformed three-dimensional objects, which unfold to reveal the new shot. These are usually used as linkages between widely

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different segments within a program. They are a deliberately visual device and draw attention to themselves. Digital effects form a visual exclamation point and can be used to create a particular visual style.

There is another person who uses exactly the same devices to create the final visual product. This is the vision mixer, who, rather than working in the post-production area (ie after everything has been filmed) creates the edits as the program goes live to air (or live to tape). The vision mixer creates the edits on the run, under direction, creating the visual cohesion "live". This is necessarily a less considered process the images produced are a result of reaction on the part of the vision mixer and director, rather than thoughtful assessment.

Montage

Editing has so far been discussed in terms of how it orders and enhances the content of the story. The montage is a sequence of images or sounds, which form part of the content itself, creating a meaning that becomes more than the sum of its parts. When shots are edited together, each has a meaning that is seen in the context of the other. The montage uses this principle to create new meaning from seemingly unrelated images and sounds.

Montages are used to relate overall concepts. They may describe the serenity of a scene, the exhaustion of war, or the gossip of neighbours. They usually do this non-verbally, or perhaps using only snippets of dialogue to advance the meaning. Montages are used to collapse time, or to quickly show the passing of time. They can also be used to highlight symbolism within the film, forming semiotic relationships between seemingly associated events, signs and objects (Whitaker 1970).

The montage forms part of the visual language in that it is a noun, a simple concept that is assimilated through the viewer's interpretation. It is visual lyricism, and although it usually explains or advances some aspect of the plot, it does not necessarily have to do so. It can be a pause in the rush of the story, a time to reflect on the events that have passed, and at its conclusion, the plot is then able to pick up the action and direct the story onwards.

2.2.6 Sound

Sound is as important as the visual in the creation of an evoked world. It imparts as much information to the audience as the image. Drawing the audience into the story, it involves them in the narrative interaction. Audio is crucial in suspending the disbelief of the audience. Sound

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describes the environment of the discourse, the emotions and tempo of the story. Even in the silent era, the cinematic experience was enhanced by orchestras or pianists playing music as a counterpoint to action. Recorded sound was a latecomer to the visual grammar, but it is now crucial in the creation of evoked world.

Sound can be categorised into three distinct areas, the spoken word, music and effects. Each of these elements is used to reinforce the other and are mixed together by the sound engineer to create a balanced and understandable whole.

The Spoken Word

The spoken word encompasses the dialogue between the characters in the story, narration and commentary. It is the spoken word that imparts much of the information in the narrative, forming the exposition and explanation of the events. The spoken word can in turn be sub-divided into three further categories, dialogue, narration and commentary.

Dialogue is the interaction between characters, which explains the conflicts and crises within the plot. Most of the plot is imparted through dialogue, be it verbal, or non-verbal communication. There is as much communication taking place in a raised eyebrow as is imparted with a sentence, and the acting in a scene forms part of the dialogue between characters. The spoken dialogue is most easily grasped by the audience, allowing them to gain insight into the characters, and situation. "Tone, accent, word selection, breath patterns etc. tell us such basic things as the age of the character, his educational background, his aspirations, his ethnic and regional origin. Emotional states of the characters can also be determined in large by the volume, constriction, and rapidity of delivery..." (Whitaker 1970 pg. 102). Dialogue is usually internal to the scene, the sound being synchronous with the recorded image.

Narration, however, can be created with the voice over, where the explanations of the plot are external to the visual realm represented. This is not always the case, however, where narrators are characters within the story itself who explain the action as the story progresses. The narrator is the storyteller, and his or her narration creates points of explanation or transition within the story. Commentary, likewise is usually external to the image, but is made by observers of the story, rather than participants. Unlike narration, commentary cannot foreground action, as the commentators are apparently seeing the film at the same time as the viewer.

Music

Music is used within the film to set the temporal pace of the story. Working in conjunction with the edit, music is one of the best ways to create narrative tension, or set the mood of a scene. The careful placement of music can make a scene seem poignant, or dramatic, thrilling, or elated. Music can be either external or internal to the plot. External music is non-synchronous, where there is no narrative explanation given as the music's source. Internal music is usually explained within the story, the scene may be set at the opera, a rock concert or a symphony (Whitaker 1970). Music adds an extra dimension to the story, and creates an aural environment in which the story can take place. It can promote the action, driving the editing and movement onwards towards a climax, which is often musical as well as action based.

Effects

Sound effects are the workers of the story. They can be recorded at the same time as the image, in which case they form the background sound, or they can be added to the mix at a later stage. Effects are the atmosphere of the scene, the sound of air conditioning, the wash of water on a beach. Without effects the connoted world seems shallow and the audience does not get a real sense of the location environment.

Postproduction sound effects are used to enhance action, or to fix badly recorded location sound. Many sounds, such as the fist punch, the firing gun, sound completely different in film than they do in real life. This is because the sound as it is recorded on the set does not fit the predetermined expectations of the "filmic" sound. These effects were first inserted into films to enhance the action, and have since become stereotypical sounds expected by the audience. Hence when a correctly recorded gunshot is put in a scene, it does not sound "real" to the audience, who have become accustomed to the enhanced version.

Localisation

If the reproduced sound is quadraphonic or stereophonic, it can be used to help locate the action on the screen. Film technology uses quadraphonic sound, where the audience is placed in a theatre which projects stereo sound from behind, as well as in front of the audience. This creates the feeling that the audience is immersed in a total environment, with all the spatial relationships that one finds in real life. Sounds come from in front, behind, left, right, up and down. Television has until recently used monophonic sound, where no spatial information was imparted to the

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audience; hence the auditory experience of television was less involving than that found in the cinema. Television stations are now transmitting in stereo, and stereophonic sound can now be reproduced in the living room. Stereo enables the viewer to perceive left, right and sound depth cues from the replayed sound. Quadraphonic or stereophonic sound enhances the interaction between viewer and film. As the head turns to locate the sound, the eye is drawn to the sound source. With sound placement and depth cues, the audience perceives a richer screen environment, and their attention can be directed towards the action.

The visual grammar contains the verbs, nouns, adjectives and phrases that make up the cinematic whole. Each element brings with it a contribution to the message that is being related to the audience. Film and television producers have, for the past century, developed and used these techniques to create the construction of reality that confronts us daily on the screen. These techniques create a narrative whole, constraining and controlling the viewer's perception of the evoked world. The screen narrative becomes more than its disparate parts, more than just the plot or the acting, more than its visual grammar. The elements are combined so that each enhances the story, adding its own layer of meaning. The audience is manipulated into seeing the world the way the producer wishes them to see it. Interpretation is encapsulated on the screen itself, rather than in the imagination. The visual grammar creates the cinematic reality. It is the syntax of the language that forms the visual narrative.

But it is perhaps how the film aesthetic differs from reality that forms part of the appeal of cinema and television. The experience of a person viewing film and television differs greatly from that of a person witnessing live theatre. It is the visual language, the construction that delineates reality from the screen. The constructed image comes close to reality, but never quite touches it. We do not see the world in terms of the "cut" the "tilt" and the "pan". We cannot manipulate time, edit out the mundane details of our lives. What cinema and television does do is to record the images and sound that the real world provides, and mimic the construct of our lives (Wimberly and Samsel 1996).

2.3 The Televisual

Television has become a primary cultural focus in our society. It has become greater than its technology and its cultural form. *It has become the televisual, an ontology, a way of seeing and of telling.*

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"The televisual escapes from television and spreads across the world of our dwelling. The televisual has become part of the condition and means of the formation of our given understanding. Our being exists before and after it is called into being by televisual encounter. It is not that 'us' and 'television' are elemental to our lifeworld - just as there is no clear division between us and our culture. The televisual is a making and a made that assists in the construction of a self/culture and its self. We picture ourselves in the knowing picture of the world picture- we live located in image" (Fry 1993 pg 26).

Tony Fry's (1993) ideas are drawn from the German philosopher Martin Heidegger, who, during the Second World War, and using the metaphor of his time, described cinema as a loaded gun pointed at the audience. Heidegger discussed what appears on a screen in terms of the projected and projecting. What is projected (the image) is also projecting meaning. This in turn results in a projection, where the worldview of the audience, having been changed and framed by cinema, is projected back onto the world. Heidegger saw film as a "means whereby the world was being turned into a picture" (Fry 1993 pg 25). Since the advent of television, the projected image of the world has moved into the living room, where world perceptions (and projections) are manipulated on a daily basis.

This enframing of the world by the televisual is a cyclical process. The televisual frames perception, which in turn changes the world so that the world is enframed in terms of the televisual. Television and culture thus merge into a single worldview. Events in the world are captured as an image, by the television camera, are projected at the audience, and in turn are "released as the imaginary and materialised as the replicated" (Fry 1993 pg 27). Thus the world itself cannot escape the televisual, as television has escaped from its box and forms the boundaries of how people view the world (Fry 1993).

As well as limiting, the televisual enlarges the viewer's perception of the world. Geographically, awareness expands. But this view is fractured, chronologically rearranged, reordered and restructured. The viewer is only allowed to see what is permitted; the view is restricted, channelled towards the topical focus points. The expanding awareness is thus blinded to what is seen to be irrelevant. If something is not seen on television, then it is not known to exist. If not seen on the nightly news, then it didn't happen (Fry 1993).

The televisual effects people's being, in the sense that it enframes their sense of place in the world. So "selfhood" is affected, as well as "worldhood" and the sense of "being in" the picture. The televisual makes our *selves* seem unimportant yet places us *in the picture* in terms of our understanding of world issues, at the same time as expanding (yet constraining) our *world view*. Television strays across these three locations, and perhaps, according to Fry, can be regarded as a location itself, where space, time, distance and being merge into one (Fry 1993).

Constructed Realities: The Televisual

The televisual also disembodies the viewer. Rather than being a whole-body experience, the process of filming can in effect dislocate the eye from its physical location. This is because the movement within the screen bears no relationship to the physical motion of the viewer. Eamon D'Arcy (1993) points out that the use of "Rocket-cam" in the 1991 Gulf War enabled the television audience to see a "reality" that would never have been perceived without miniature television cameras. Similar to a searchlight, it was able to reveal without revealing all, making perception "an inescapably political issue" (D'Arcy 1993 pg 106). The images presented by the U.S. military to the world were sanitised, censored so that the perception of the war was couched in terms of technology. The "Rocket-cam" constructed a point of view of the war, an eye projected outwards from the television screen and into the streets of Baghdad (D'Arcy 1993).

But the "Rocket-cam" did not reveal the aftermath of that destruction, only the journey and impact. It created a computer game like quality to the portrayal of war. The destruction was couched in terms of "collateral damage" and "soft targets" rather than "buildings" and "people". The dehumanising of the discourse, and the emphasis on technology, as personified by the "Rocket-cam" concealed the ugly truth of war. The eye was projected towards what was permitted to be seen, and was allowed to see only within the bounds of the camera view. The eye was disembodied, unable to maintain contact with reality, or with humanity (D'Arcy 1993).

The spatial relationship between the viewer and the events portrayed on television exists on two conceptual levels. Not only does the television bring the world into the lounge room, broadening the audience's worldview, it also sets the relationship between the events portrayed on the television as being equidistant to the viewer. The television set is the interface between "here" and "there". It abolishes distance. An event portrayed in Bosnia seems as real and immediate as one in the next suburb. The world portrayed on the television set seems less than real (Adams 1993).

But the audience does not become overly engrossed and consumed by the televisual. The two worlds, the "here" and "there" exist concurrently. It is quite possible that objects and events present in one world have no relationship whatsoever to those present in another. The two worlds exist at the same time, but are not necessarily contemporary. The televisual can be thought of as the location of the televised, but does not encompass the viewer, rather only the objects and events captured on the television. The "there" is contained within the box, and the television screen is the opening (or interface) to that other world. But that world is merely a flickering representation, a construct, no matter how much authority its televisual presence gives it (Adams 1993).

2.4 Interactive Media

The concept of the televisual distance stands in stark contrast to that of the interactive computing environment. The physical distance between the user and the constructed world is truncated to mere inches, and the conceptual plane merges with that of the user. Interactivity allows the user to conceptually bridge the gap between the “here” and “there”, allowing the user to reach through the screen, and directly affect the represented world. The representation does not usually pose as reality, the user is more than aware that the world with which they are interacting is a constructed one. It is interesting to note that when a television screen is used for video gaming, the televisual is in a sense unplugged, and the representation loses the illusion of real time, real space. The world represented on the screen becomes a magical one, allowing the user to go into an alternative reality. But that does not mean that the world is not “live”. The interaction required of the user in a video game is synonymous with being permanently connected to live television (Skirrow 1986). It is a world with limits, narrative as well as visual, but unlike the televisual the user is able to explore the evoked world to these limits. The eye is able to see in all directions, rather than being presented with a restricted view. In many interactive worlds, the representation creates the illusion of an ecumenical world, where the expectation is of a world with no boundaries. It comes as a surprise to the user when they actually reach the boundaries of the evoked world.

The interactive environment allows the two worlds to exist contemporaneously, the “here” and the “there”, because the interaction with the constructed world changes the reality of the user, not only in terms of practical skill, but also in terms of physical reactions, adrenaline levels and emotion. The world may be “there” but the user feels that they are “there” too, whilst simultaneously being “here” as well. The constructed world demands attention, it is the kind of totalising experience that sublimates the “here”. It eclipses the user’s reality and is one of the reasons that interactive gaming is so popular. It is this linking of the two locations, the “here” and “there” that makes the computing environment unique. The difference between the interactive domain and that of the televisual is the ability to reach through the screen and affect the narrative outcome. The “there” is changed by the “here” in a way that can never happen in the televisual.

The physical interaction, be it through the mouse, joystick or keyboard also reinforces the differences between the computer screen and reality. We interact with our world directly, rather than having to use mechanical input devices. The result is that computer interaction is somewhat clumsy, the user first having to acquaint themselves with the interactive tools before the interaction becomes satisfactory. This interaction enables the hand to join the eye in the constructed world. Objects can be examined, and navigation can be controlled. But the interaction is a fantasy, and often bears no relationship to how we can interact with our own environment.

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Even the data glove, which is used in virtual reality systems, enables the user to navigate in ways that are simply not possible in life. The point of a finger can transport the user through walls, and high into the air. The tools of interaction, the screen, and the interface all differentiate the constructed world from reality.

The user is aware of the constructed nature of the virtual world, acknowledges it, and continues the interaction. Even with photorealistic three-dimensional computer modelling, many computing environments currently have an artificial quality that reinforces the fictive nature of the experience. Because most navigation within a narrative is modeless, the user is able to see for his or herself the entirety of the restricted representation. Their sight is not so much directed, or projected, as constructed. The filtering and editing of representation have been done in the process of creation.

Digital technology already creates imagery that is comparable to anything created on film. Full motion video is a reality, and 3D modelling enables realistic imitations of environments and people. The differences between the cinematic and digital media begin to merge, and the traditions and techniques of traditional media become more relevant to the digital story. Whether the new media will become a more powerful storytelling force than those mediums that exist already remains to be seen. The closer it comes to the representation of reality, the more it will invite comparison with the current storytelling forms. But even if the aesthetic differences become less marked, the computer narrative will remain markedly different from other forms of storytelling. The fundamental differences between the new media and the old are the changing function of the audience, from being a mere spectator of the action to a participant (Wimberly and Samsel 1996).

The participation on the part of the user changes the construction of the visual grammar itself. Because the story is not necessarily linear, the user must now pursue or discover the story rather than having it presented to them. The user chooses to move through the narrative environment, discovering the story, choosing which character to pursue, or what narrative path the story will take (Cirino et al. 1994-5). The producers can no longer place constraints on the field of view, or on navigation, unless there is some sort of narrative or structural constraint placed on access.

There are generally two methods of delivering narrative content to the user. One uses prepared images, where photography, artwork and 3D models, movies, text and animation are combined to create the story. This means that each field of view is a separate image, using a visual "cut" to navigate between the images, in order to create the world. This is true even of quicktimeVR movies, where each field of view is 360 degrees, but the movement between each node point is a "cut".

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The second delivery form is more flexible. The world is constructed by the computer itself, being a three-dimensional environment (a games engine) which is “rendered on the run”. With current computing power the result is that the images are not as high definition as those pre-rendered images, but the movement through the world is smooth, without a visual transition between views or scenes. Some narratives use a combination of the two methods, with rich, fully rendered images and video sequences used for the introduction and exposition, together with a powerful games engine used for the action sequences.

In narratives that use a games engine, where the user can roam the world at will, the author has no control over shot size, camera angle or tilt, panning or dollying. Even in terms of the visual pace of the story, the speed at which the user moves throughout the environment is left to the user, who has free control over their experience. This freedom of experience can limit the emotional impact of the story, as the traditional techniques of the cinematic visual language become irrelevant. In film, emotion is created through a mixture of shot size, acting, music, lighting and camera movement. One of the challenges for the interactive writer is to construct emotional content within the interactive environment. Narrative tension is no longer driven by the edit, the shot, or the restricted view, but instead depends upon the situations and reactions of the user. Tension is created by fast action sequences aided by the choice of music. The interaction becomes thrill or action based, rather than being created by the traditional and effective tools of the visual grammar and good storytelling.

In multimedia projects where prepared images are used, the shot sizes can indeed be controlled, creating visual impact, and allowing the author to focus the user’s attention on particular points of interest. However, the edit becomes the user’s navigation tool. In games such as MYST (Miller and Miller 1994) which uses pre-rendered images, the pacing and tempo of the story bear a direct relationship to the user’s actions. The faster the user clicks, the faster the pace. However, the aim in MYST is not fast action, but to create a contemplative and rich interactive experience. Sound plays a role here, creating an ethereal, almost melancholy mood, encouraging contemplation and thought. Sound is a powerful tool in creating an involving interactive world.

Depending on the content of the story, some interactive narratives do allow the design team some control over the visual grammar. In order to create narrative tension and emotion in environments with free navigation, the author has to choose events that constrain movement. Linear “video” sequences can be used to create exposition, and all of the cinematic visual language devices that enable the emotional manipulation of the audience come into play. But the constraint of interaction is anathema to gameplay. So, a balance between linear narrative sequences and free navigation must be established. Many interactive narratives are therefore a combination of the two modes. The navigation is modeless, but the exposition and some action is linear and non-interactive. The more linear the structure of the story, the more easily the author can impose narrative structure, but with the trade off against satisfactory interaction by the user.

Screen size or action space is also important in interactive production, not only in terms of the dramatic *mise-en-scene*, the emplacement of action, but also in terms of technical image quality and speed. Although computer monitors have an aspect ratio of 3:4, not all of this space is necessarily used for moving images. The smaller the active space, the faster the action within that space. Many computing games limit moving action, as playback speeds between machines are not consistent. Playback quality may be compromised by a variety of factors; including the video board compression and decompression speed, data transfer rate (the speed of the hard drive), speed of the central processing unit (CPU), the delivery rate of the hardware data bus, the amount of RAM, and the CPU load (how many applications are running) (Johnson et al, 1994). These issues can constrain the narrative representation of the story. How the production team addresses these issues can affect not only the visual aesthetic of the product, but also how it performs and its subsequent popularity.

Playback speed is the reason behind the two forms of content delivery. Prepared or pre-rendered images take a lot of processing power to deliver, and run slower on many computers, whereas images that are “rendered on the run” have lower image quality but run much faster. The compromise is therefore between fully pre-rendered images, and that of fast action. The visual difference is also between seemingly realistic images, and those that look artificial. Current technology does not allow for both, although this is sure to change.

One technique that has evolved to reduce the active screen space, and improve performance is the use of the interface to enframe the action, creating a non-moving border around the action. The advantage in this is that the user has permanent use of the functions of the interface, with the added bonus of limiting the active memory, allowing faster action. However, this enframing limits the sense of immediacy, forms a conceptual barrier between the user and the action. An uncluttered window to the virtual environment provides a clearer view.

By using the interface as a frame, the aspect ratio of the moving image may also change, altering the viewing experience of the user. The visual content has to be considered in conjunction with the new aspect ratio, for example, if it is more panoramic, the “cut” between images has to be carefully considered, indeed whether the “cut” is an appropriate transition at all. The interface restricts the user’s field of view, constraining the action space so that it occupies an even smaller space on the computer screen. The smaller the image, the less impact any movement within the screen space has, and visual detail becomes lost. The overall effect can be that of a lesser experience, the suspension of disbelief required in any narrative is harder to achieve, and the evoked world becomes less than real.

2.5 Summary

The visual language of the interactive narrative is still in the process of evolution. It draws from the visual grammar of film and television and invites comparison with the sociological effects of the televisual. Although the interactive experience uses the devices of the visual grammar, they are no longer enough. The different methods of navigation and presentation define the way that the visual communicates to the user. When the producers of the narrative choose the mode of navigation, they are in effect choosing their method of devolution of power. Complete control is no longer in the hands of the producers, as the user also defines the visual experience.

The interactive narrative is changing how audiences approach the story. It becomes less a *telling* of a story and more of an *experience* of story. The reality that is constructed by the interactive production team is experiential, it has to be moved around in, investigated, either by the user themselves, or by them controlling the actions of characters in the story. The user is the driving force behind the story. They have to seek it out, as the story will no longer be delivered. Even the narrative experience itself can no longer be fixed or certain. Each time the story is accessed it brings a different experience. Choices made by the user effect the narrative outcome. This is the joy of the interactive experience. How writers and producers have redefined how they approach the story structure in response to the comparative freedom of interactivity will be revealed in the next chapter.

Chapter Three: The Interactive Narrative

Narrative has always been interactive, in that it creates a response, a discourse between the intentions of the author and the imagination of the consumer. But in traditional narratives the discourse is one sided. The story is fixed, with one outcome, and different interpretations of the text are dependent on the worldview and literary experience of the reader. But this is not what one generally understands to be an *interactive* narrative. The interactive narrative lives firmly in the multimedia domain. Interactivity means that an action on the part of the consumer creates a change in the constructed world that is created by the author. Because the two worlds interrelate, actions in one cause a reaction in the other, a narrative linkage of cause and effect exists between the “here” and the “there”. The story, depending on the choices of the user, can change with each viewing.

With the interactive narrative, the audience has to actively involve themselves in the story; they have to *do* something. The story invokes a physical reaction, in effect the user drives the story. This presents a challenge to the author. Each choice by the user creates a branching of the story, offering the possibility of a different storyline. Each path however needs to retain narrative cohesiveness. The structure of an interactive narrative is therefore markedly different from that of traditional storytelling.

The freedom of choice, of interaction and non-linearity allows the user to construct story, allowing the “free connection of ideas, words and images” (Frongia and Allison 1992 pg 280). The exploratory capabilities of the interactive medium raise questions as to whom does the text belong, the user or the author? In literature the reader experiences a linear structure. The detail provided by the author allows the reader to fill in the gaps with their imagination, as they move in a linear fashion from point A to point B. With a non-linear narrative structure there is no guarantee that the user will reach point B at all, because they may become sidetracked. The experience of the text therefore becomes an act of creation by the user as well, where participation determines a different experience and therefore a different construction of meaning in each text. If the text is constructed with enough complexity, a user could access it for a lifetime without once recreating the original interactive experience (Frongia and Allison 1992).

Interactive stories usually begin with some sort of exposition, an explanation for the action that is about to unfold. Within the (usually linear) exposition sequences, the user is provided with enough information to understand the environment and is often assigned a role. But from these traditional beginnings, the interactive narrative structure begins to diverge from the norm. The active role of the user allows choice. The choice of action, inaction or movement changes the

relationship between time, cause and effect. The more the author allows choice, the less structured the narrative becomes, and relationships between the events in the story begin to have a non-linear relationship with the narrative time line. A totally non-linear structure means that the author cannot be sure if vital exposition is imparted to the user at any particular point in the story. Plot points, rather than occurring at proscribed times of narrative tension become random, with each user experiencing a different plot sequence. Because non-linearity means that each viewing creates a different story, authors have responded by creating multiple story endings.

Rather than being a two-dimensional linear structure, the non-linearity has transformed the writer into a three-dimensional artist. The writer has to begin to think of their story structure in terms of the third dimension, events and the narrative linkages between them existing in three-dimensional space. The narrative structures become an intricate interweaving of cause and effect. And not only is the structure of the interactive narrative three dimensional, but the evoked space and experience of the story has to be conceptualised spatially as well. Each interactive journey has become a new experience, an exploration of the evoked world of the author. Within that world multiple meanings can arise from the events in the story, as the user creates their own cohesive whole from the fragments of detail supplied by the author.

3.1 Games

Stories with different outcomes do not draw their origins from literature or film. In computing circles, it is widely accepted that computing games originated from the war games that have been popular since the seventeenth century. In these games the environment of the battle becomes more important than any individual character. Traditionally played on large landscaped boards with models, the genre recently evolved to include role-playing board games such as *Dungeons and Dragons*. Individual characters were introduced into the environment, and a rich fabricated story structure resulted (Skirrow 1986). Role-playing games, such as *Dungeons and Dragons*, enable the player to improvise with story, by playing a role they create their own script. The creators of the game provide the narrative environment, but the story is in effect constructed by the players. It is a form of hyperrealism, where multiple characters provide their own interpretation of events in the story, allowing insight by others of their different worldview. In this way the role-playing game reflects how reality is experienced (Frongia and Allison 1992). The fantasy aspect of the connoted worlds in these games soon included the spaces of the future, with science fiction becoming part of the role-playing world (Skirrow 1986).

With the advent of commercial games for the computer, games split into different categories. Firstly, the video arcade games were developed, which focused on real-time interaction with the adversary. This called for skill in fast reaction times and excellent hand-eye coordination. These

games were first installed in amusement arcades in 1975 and soon had a large following (Skirrow 1986).

The other type of game required intelligence rather than physical skill. These were developed for the computer and were initially advertised in computing magazines. The emphasis was on being able to function in a technological environment. An example of this type of game is the user playing the part of a Third World leader, who has so much fertile ground, some grain in store and a certain population. The user has to juggle all of the variables for as long as possible before being subject to famine or a military coup (Skirrow 1986). The type of game determined the way that the content was delivered to the audience, the need for fast action created the games where images were generated from within the program itself, and the slower games enabled higher quality images to be used. So the different needs and approaches determined the mode of navigation and hence the visual language that resulted.

The popularity of game formats soon lead to their development for home computer and games consoles. But because the age of the audience in the home market was often younger than those who frequented video parlours, the games by necessity had to change (Skirrow1986).

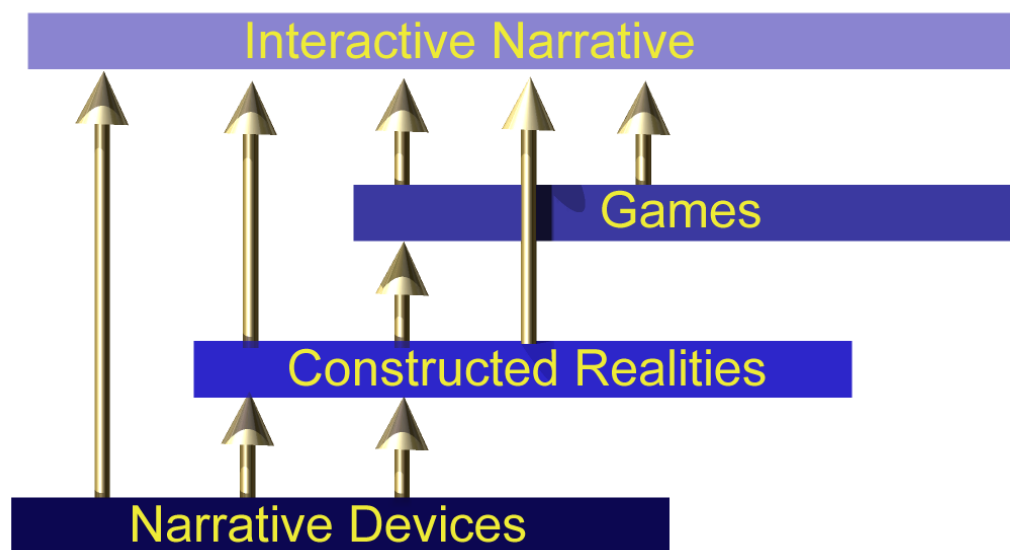


Figure 7: Contributions to the interactive narrative.

Adventure games, interactive dramas and storybooks evolved, drawing on the popular culture of television, cartoons, literature and comic books. With the assimilation of familiar cultural icons into the new media, the structural form of the interactive entertainment was also transformed. Games became a new form of storytelling. Because the interactive narrative is a multimedia event, each media adds its input directly to the interactive narrative, and indirectly through its contributions to the other media forms. (See Figure 7.) These multiple contributions each add

their own level of richness or meaning to the interactive experience. For example, video games contribute directly to the interactive narrative because of their non-linear form and level of gamely, but also draw from the visual language of cinema and often make references back to literature. Genre has therefore become a cross-media phenomenon, as have popular characters, events and storylines. Popular movies have been translated from cinema, to the game and vice versa. *Indiana Jones* has an interactive offshoot, and *Mortal Kombat* has become a movie.

Because of the history of gaming that has been assimilated into the interactive narrative, many contain puzzles or problems to be solved. The user has to bring a level of skill to the story, thinking is involved. The user not only has to bring the sum total of their world experience to the interactive narrative, but they also have to *apply* it to the story. The game element in the story increases the level of involvement, but brings with it irreverence, a lack of seriousness. Interacting with these stories is fun, and this element forms much of the appeal in the new narrative. Writers of interactive narratives have to be aware of gameplay, as the new interactive genre brings with it an expectation of gaming.

3.2 Linearity vs. Non-linearity

Every interactive experience is linear, the user experiences the story with one event occurring temporally after the other. However, events within the story are not necessarily written or stored in a linear way. The challenge in multimedia production is to produce a comprehensible linear experience in a format that can be non-linear in its form (Redmond and Sweeney 1996). Temporal relationships between actions and scenes can no longer be guided by the linear nature of the medium, as occurs in literature, television and film. Non-linear narrative is by default post-modernist, it cannot escape its tendencies towards fragmentation of temporal line, its deconstruction of plot, and the ease in which it tends towards nodality.

If a writer is trying to decide whether to make their interactive story linear or non-linear, he or she has to be aware of the fundamental differences between the two. In a linear interactive, the story is action and character driven. Once the story has commenced, the narrative path cannot return to the beginning. A series of narrative complications create choice for the user and narrative tension, but the story inexorably drives towards one or more points of climax. A non-linear narrative is location and task driven. The user determines the actions and responses of the character. This allows for obstacles, diversions, exploration and retrieval of key objects (Mueller and Morrison 1995).

But even in the non-linear narrative, in order for there to be a story, there must be narrative links between the events. Events set up inevitable repercussions, cause and effect. Each action creates a reaction. In order for narrative structure to be imposed, there has to be some control over the interactive experience so that rising tension can be created, holding the audience's attention throughout the story. Narrative tension is at the heart of storytelling. A balance must therefore be struck between the freedom of the user, and narrative coherence. And this is the challenge for the interactive writer. To create interesting characters and an engaging story structure while allowing the user freedom to interact (Garrand 1997).

The interactive writer needs to consider the links between each segment, in that the choices are natural and almost transparent (Redmond and Sweeney 1996). There should be a narrative reason behind each choice, but because stories carry richness through description and examination, every choice does not necessarily have to advance the plot.

The story and its environment are finite, the user can only explore to the boundaries of the constructed world. How the user is allowed to navigate through this environment is at the heart of the interactive structure. Architecture is a design structure that determines not only the extent of the constructed world, but also how the user is allowed to interact within the world's boundaries. The author can decide on two basic types of architecture in their program.

Open architecture allows the player to navigate freely between locations at any time. Movement is limitless. However critical objectives may need to be obtained in order to move through the story's hierarchy. The story can therefore be constructed in a linear manner, where specific events work in a sequence to progress the plot forwards, or in a completely non-linear fashion, where progression through the story is more free form. Multiple story paths go hand in hand with the open architecture.

Closed architecture creates a very specific set of boundaries to the user's world. The user is not free to navigate from location to location, and the story is limited to a linear structure with nodes of digression (otherwise known as cul-du-sacs). Figure 8 is a three-dimensional representation of a closed architecture story. The user must find the critical path through the story in order to achieve an outcome (Wimberley and Samsel 1996).

Nodes in a linear plot structure can allow the user to pause so that they can explore the interactivity within a particular scene. Nodes are digressions, allowing plot time to freeze while an additional layer of meaning interweaves with the main plot. This is a common interactive form used in children's storybook titles. *The Tortoise and the Hare* (1994) included in the Case Studies is an example of this type of structure. On each storybook page, the user can click on any of the objects that appear on screen. These clickable events form nodes of digression from the main plot,

but at the end of the exploration the user can return to the main story by moving on to the next page of the storybook.

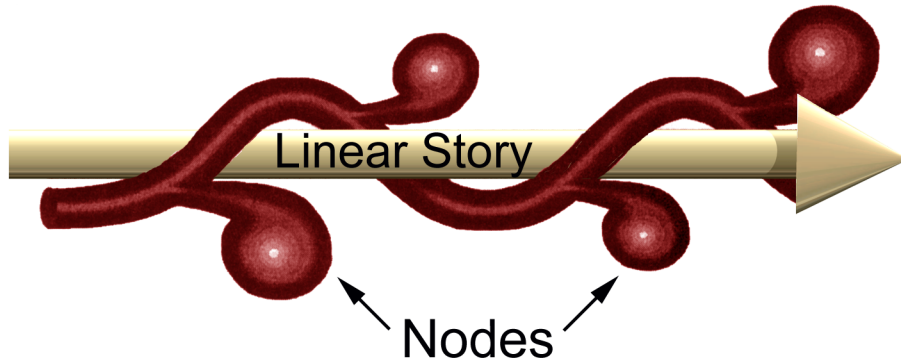


Figure 8. Nodes of digression in a linear plot (After Wimberley and Samsel 1996)

In some linear interactives the user certainly interacts with the story, but each interaction has the sole purpose of progressing the plot. There is no choice on where the story takes the user, and there is no reorganisation of the event sequence. If the story is too linear and requires the user to solve a number of puzzles before progressing, frustration can result if the puzzles prevent progression through the story. However, the linear plot can make full use of the traditional storytelling techniques and can use narrative tension to its best effect. The linear plot can be more detailed, because it has fewer choices, the story can be quite long, because memory is not taken up with multiple layers of plot (Mueller and Morrison 1995).

Linearity can also be created with the total cessation of computer interaction. Like cinema and television, linear sequences can be played to the user, to ensure the information is imparted. The interaction within these sequences reverts to that of a one-sided discourse, and the medium begins to resemble the televisual. The author's authority and control reasserts itself, at least until the sequence is played out. Some interactive narratives use these short linear sequences to introduce exposition at various locations. Narrative plot points therefore become location based. Others combine event sequence with linear exposition, in that linear explanation only occurs after significant interaction. After the required tasks are performed, the user is rewarded with further information.

Non-linearity challenges Aristotle's theories on narrative unity, in that the plot can be suspended, or altered at any decision point in the story. Elements within the story are rearranged in a way that gives rise to a new text with new meanings. However, it can also lead to multiple interpretations of the meanings contained in the story, which sometimes leads to a lack of

comprehension and cognition. In many instances the fragmentation is desirable to the author, but consideration must be given to the audience. If the narrative is expected to be a teaching tool, then multiple interpretations are less useful, and a more linear structure should be considered (Plowman 1996).

A non-linear plot can shorten the interactive experience. There may indeed be many alternative plots, but will the user access them, and will the duration of the experience be long enough for them to feel they have obtained value for money. Intricate layers of branching can have the effect of using up lots of memory space but give the user fewer locations to explore. The non-linear plot allows multiple options and solutions to any problems posed to the user, so it can be a very satisfying experience, and the story can be revisited many times without repetition (Mueller and Morrison 1995).

Digression is often seen as an interruption to the plot, however thematic links can form between these digressions, and they can become the narrative itself. Digression can form *interpolated stories*, that are unrelated to the main narrative, *nested stories* that are complete entities but are told within the framework of another story, and even become *progressive* where the story appears to digress, but the digression actually advances the plot (Murray 1996). Digressions can take the user to places that are unexpected, and return them to their point of origin, where the plot is then able to progress depending on further choices.

If digression is used as a narrative device, there is nothing to stop the plot structure from becoming totally non-linear. The nodal structure, according to David Hayman's literary analysis of non-linear literature, can be used in the interactive narrative. With nodal narrative, temporal access bears no relationship to the story imparted. Nodality is an alternative to linear plot. Thematic links and repetitive imagery could be used to create a whole, without the Aristotelian beginning, middle and end, or completeness of action. Comprehension therefore becomes part of the experience, with the user forced to make the narrative links between the event nodes themselves, rather than having it constructed for them. Interactive works which use a nodal structure do exist, an example being Laurie Anderson and Hsin-Chien Huang's *Puppet Motel* (1995), but, as with any postmodernist work, there is some debate as to whether it is narrative or not. It certainly is an interactive experience, but is it story? History, it seems, is repeating itself, and in this new medium a re-evaluation of what determines story is again required.

3.3 Dramatic Action

Brenda Laurel (1990) likens potential for narrative action in terms of a theatre with the curtains closed. The play the audience is about to see has limitless possibilities. As soon as the curtains are opened, the dramatic potential becomes limited. The era, setting and characters in the narrative all place constraints on dramatic potential. Anything potentially can happen within a narrative, but the believability is constrained by context, or environment. What could happen begins to be further constrained by the actions that actually take place within a story. Patterns of cause and effect emerge, and the audience forms expectations of what is about to happen in terms of what the story is about and where it seems to be going (Laurel 1990).

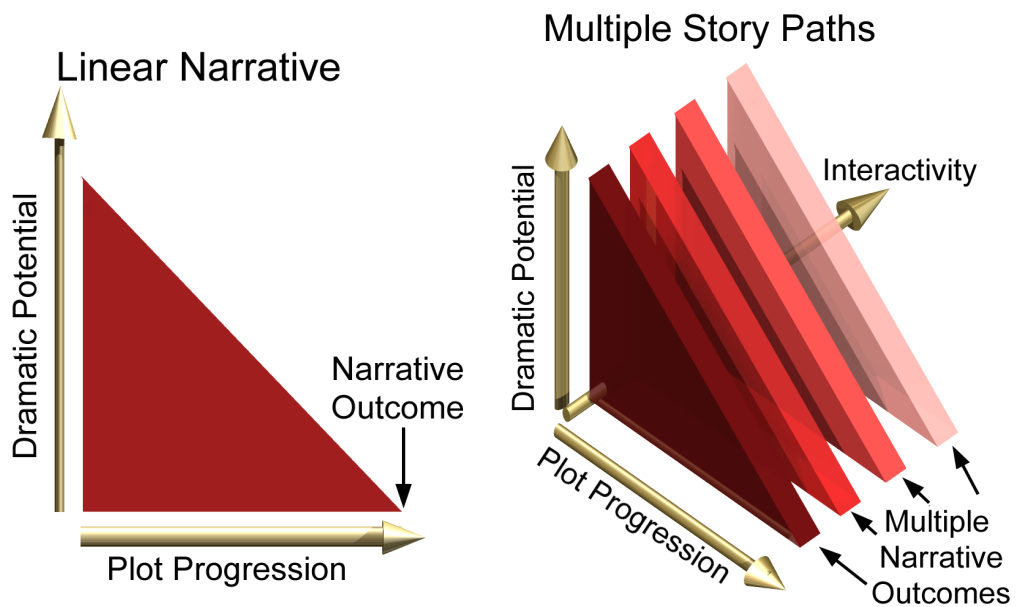


Figure 9. The narrowing of dramatic potential in linear and multi-pathed stories
(After Laurel 1990)

Dramatic potential for action becomes restricted to fewer and fewer potential outcomes, in traditional narratives culminating in a climax, where all alternative possibilities are eliminated, leaving just one (Laurel 1990). The joy in the interactive narrative is that at any point the story can jump to a different narrative path. (See Figure 9.) In the interactive environment, with its multi-branching capabilities, there is no need to limit the dramatic potential to just one outcome. If the linkages between causality are maintained between each branch of the storyline, the dramatic potential can culminate in many different paths and outcomes, depending on the choices of the user within the story environment. Non-linearity means that dramatic action moves from being time based, to location based. No longer can the writer be certain *when* a particular event will happen, and care must be taken to control the event sequence.

The causal linkages within a narrative are often determined by the goal of a character, the main protagonist. This goal is the driving force in the story, although the plot may take the character on a different path from his goal, their reasons for action are encapsulated within that goal (Laurel 1990). In the interactive narrative environment, the story is driven by the goals imposed on the user by the narrative structure itself. It is the user who initiates action, who makes choices and who affects the path of the story.

The goals in an interactive narrative are usually outlined in the opening sequence. The user is not operating in a vacuum, but is provided with the goals, motivations and background for the interaction. After the exposition stage in a traditional narrative comes a period of rising tension, culminating in a climax, the peak of action, followed by a denouement. Aristotle's beginning, middle and end. It is in the middle where most interactive narratives diverge from the traditional narrative structure. The experience of the user in an interactive environment does not necessarily create narrative tension. Narrative tension is usually the by-product of conflict and complication. These narrative devices are usually created by some form direction of narrative action by the author, be it short video or linear sequences within that environment, or a linear narrative structure. If the story is too non-linear, the complications and climax may be bypassed altogether. Branching story structures can lead to multiple endings, some which will seem incomplete and others have the feeling of a short circuit. A story without closure leaves the audience hanging, incomplete, but likewise a story without climax makes the audience wonder what the purpose of telling the story is. The interactive narrative must therefore be structured so that no matter what path the user makes, the ultimate conclusion that they make is that they have experienced an enjoyable and complete story. This involves a level of authorial control over what the user can do within the environment.

3.3.1 Levels of control

How much control the user has over the interactive environment is one of the key issues in writing an interactive narrative. The secret in constructing an interactive is to give the user the illusion that they are in full control, while constraining and containing their actions so that at the same time they are involving themselves in a story. The reality is that any story has a finite number of choices, scenes and sequences that the user can explore. The user is merely choosing amongst a set of predetermined choices (Mueller and Morrison 1995). Having decided upon the particular type of architecture to use, and whether the plot is linear or non-linear, or a combination of both, the author still has a few decisions to make about how the user will interact.

How, for example, is the user to interact with the characters in the story? In the third person viewpoint, there are three basic types of control the user can have, choice of *scene*, character's *actions* and *all* of their behaviour. These three different levels of control determine the level of

interactivity. Where the control is only that of choice of *scene*, the user chooses where the characters go, and the scene is played out without any further interaction. Where the user determines the *actions* of the characters, the clicking on locations, objects or people will cause the character to interact with the clicked object without the user being able to control what happens or is said. Where there is *total* control of a character, the user can choose everything, speech, movement and action. This form has the highest level of interactivity. Some interactive narratives use a combination of all three types of interaction or allow the user to determine the amount of control they desire (Garrand 1997).

In the first-person viewpoint, the player does not interact through a character as an intermediary, but interacts with the environment directly. The user either assumes the role of a character or explores the story as themselves. Allowing the user to role-play as a character raises many issues. If the user is required to assume a gender which is not their own, will they identify with the character? And what if they are required to perform actions that are culturally or morally inappropriate? Narrative issues are also raised when the user becomes the protagonist. How does the author control character development? Techniques have been developed that help solve these issues. One is to make the character as general as possible, so that gender does not become an issue. Another is to be culturally and morally sensitive (but not all game producers adhere to this point of view). If the role that the user is required to take on is not that of a major protagonist, rather that of a minor character, the issue of character development is neatly sidestepped. Minor characters are rarely fully developed (Garrand 1997).

The user can also be allowed to choose the personality and physical attributes of their character, thus creating further points of interaction, and tailoring the characterisation to the user's needs (Garrand 1997). In the *Cosmology of Kyoto* (Yano Electric 1993) the user chooses the sex and body shape of their first person character. At later stages in the game the user sees their reflection in mirrors. An example of mood based interaction is *Cyberswine* (Connard 1997). In this game the interaction with surrounding characters is done with choice of mood, rather than choice of action. Because in life mood determines response in so many ways, it is an entirely appropriate and innovative form of interaction.

3.4 Tools

Because of the multi-branching structure of the interactive narrative, the task for the writer is necessarily more complicated than that of writing traditional narrative. Interactive screenplays generally run to about four hundred pages, as opposed to only a hundred and thirty pages for the average movie screenplay (Connard 1997). The writer therefore has to carefully create the structure of their product well in advance of the actual writing process. How the writer constructs

their interactive world is the subject of this section. Writers are involved in five key areas of interactive production, the flow charts, the design proposal, the prototype screenplay, the interactive screenplay, and the conceptual model (Wimberley and Samsel 1996). The writer may also be involved with the designer in producing the storyboard. Because the task involved is very large, often more than one writer is used for an interactive project.

As part of the writing process, all of the issues to do with traditional narrative devices and the visual language come into play. Genre, plot, characterisation, setting, time, theme, metaphor, the shot, editing, sound etc etc. There is no structure that can be designed for the interactive narrative that does not draw on the basics of storytelling. For there to be an interactive narrative, there must at first be a story. The writer has to determine issues such as setting, environment and location. If there is to be a principal character, their age, sex and personal history has to be established. The plot of the story has to be new and reasonably original, and the author has to decide if the main character changes as a result of the plot. The author also has to determine whether the character has a distinct personality, or if there will be an absence of character, allowing the user full control (Mueller and Morrison 1995).

There is, however, one defining question that the interactive writer must ask himself or herself before starting: is this story suited to the interactive medium? Is there scope for interaction and multiple story lines within the project? If the answer is no, or maybe, the writer would perhaps be better off examining more traditional methods of relating his or her story. If the answer is yes, the writer should have some idea of how the interactivity works. The type of story will determine the writer's approach. For example, adventure games are usually loosely based on the war game, and have a more freedom in an interactive environment, than say, an interactive movie, which takes a multi-pathed linear structure (Connard 1997).

Another question that the writer should ask is: who is my audience? Who is likely to spend the money buying this product? This question can only be answered by market research. The writer has to examine existing products that use the same genre, similar interface, gameplay, interactive structure, and see where their story fits with the existing body of work (Wimberley and Samsel 1996). If there is no existing market for similar projects, the writer will be hard pressed to achieve the appropriate funding for their project. The case studies at the end of this document should be a valuable resource for examining different story types. The various narrative devices and plot structures are examined in detail, allowing the prospective interactive writer an insight into how others have solved some of the problems that arise in the interactive narrative.

3.4.1 Flow Charts and Non-Linear Story Structures

Organising an interactive narrative, with all of its linear and non-linear elements can be very complicated. A key tool used by many interactive writers is the flow chart. Flow charts help the writer to design the interactivity, placing labeled boxes on a chart to track the links and event structures. In examining flow charting, the different narrative structures will also be discussed, as flow-charting helps to visualise the story structure.

Flow charts make it quick and easy to design the interaction. Lines and arrows between boxes show the links between scenes and what direction the links go in. Not every link is bi-directional, and not every interaction is initiated by the user. Flow charts also help the writer to see the effect of any revision or change in direction of the script. In traditional media, any change may only effect the scene immediately following it, whereas in a non-linear format, changes can effect all of the scenes that are connected to it. Flow charts can also be used to chart character development, which is useful in parallel branching structures. Character development has to be consistent with the events and motivations that precede it, and flow charts can aid this process. Flow charts are also useful for presenting the overall interactive structure to prospective clients and investors, as interactive plot structures can be very intricate and confusing without some form of visualisation tool (Garrand 1997).

Not everyone constructs a flow chart in the same way, but there are some basic symbols and structures that can aid the writer in creating the interactivity. The use of symbols is very helpful in this process, as the main goal of flow charts is to increase clarity. But complex and non-intuitive symbols can create confusion. To date there is no standard method or symbolism in the flow charting process, with writers adopting flow-charting symbols that work for them. It is important to remember that flow charts are an organisational tool, and the symbols are used merely as a guide for the writer (Garrand 1997).

There are numerous computer applications that the writer can use to create flow charts, the most useful being StoryVision and Storyboard Quick, which are tailored for the interactive writer. Some basic symbols for flow charts are included in the table, (Figure 10.) but are provided merely as a guide, as there are as many different methods and symbols of flow charting as there are authors, as seen in the various examples below.

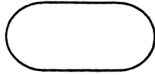


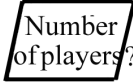

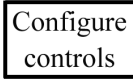
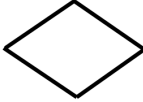
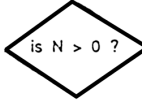

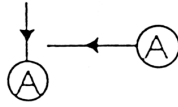
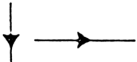

SYMBOL	USE	EXAMPLE
	To begin and end flowchart	
	Any input or output operation	
	Processing ie calculations	
	Decisions and branch points	
	Connect parts of a flowchart	
	To indicate the sequence steps and direction of flow	

Figure 10. Common program flow chart symbols (Mueller and Morrison 1995)

Flow chart symbols can be combined to create the three fundamental constructs of the interactive narrative screenplay. Those of the sequence, selection and repetition (Mueller and Morrison 1995). (See Figure 11.) The sequence is a series of actions or events that follow each other in a linear fashion. The selection consists of a branch, a choice that has to be undertaken by the user. The selection can enable the user to have a choice within the main narrative path, or follow a completely different path. The loop is a repeating structure, in the example it is a computing structure where one is added to N until N reaches a certain number. The loopback when used in narrative can also allow the user to repeat actions or return to a previous point in the story. The interactive writer uses all three of these structures in combination.

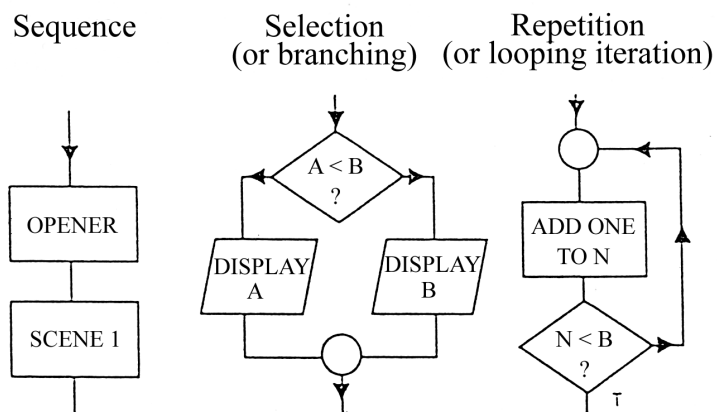


Figure 11. Flow-charting: the standard control structures (Mueller and Morrison 1995)

The Branching Structure

Branching allows the user to choose a completely different narrative path at certain plot points. Using the branching story structure as the sole method of non-linearity creates a very large story structure where the number of choices begins to expand exponentially. This is called a “Christmas Tree” where the structural diagram begins to spread out (Garrand 1997 and Cirino et al 1994-5). Even if the branching is limited to three choices, the next step in Figure 12 would mean an additional twenty-seven scenes.

Because of the numerous choices possible with this structure, it is rare for a story to be totally constructed using the hierarchical branching structure. However, many interactive stories branch near the ending, giving the user a feeling of greater control over the story. Because the branching occurs near the end of the story, the multiplication of possible events or scenes is constrained (Garrand 1997, Cirino et al 1994-5). Some of the branches may lead to a false ending or a short cut, whereas others may lead to the ultimate ending (Connard 1997).

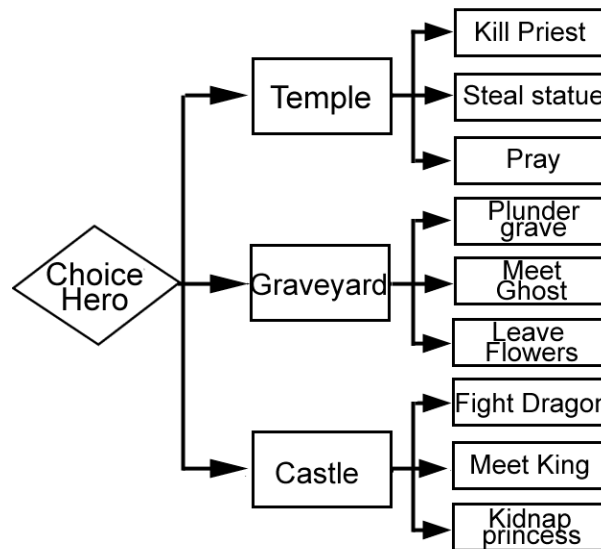


Figure 12. Selection or Hierarchical Branching explosion (After Garrand 1997)

The branching in the above example is basically linear in form, with no opportunity for the user to loop back to previous scenes. It is often necessary to allow the user to backtrack in order to correct errors or gain objects that will help their later advance through the story. Scenes do not necessarily have to link to their nearest neighbours but can link to any distant story branch (Cirino et al 1994-5). The more complex the branching, the more the story structure becomes three-dimensional. One way to represent this three-dimensional story structure is through the web.

The Network

The network should be viewed as a map of the story. In a role-playing game, a map may actually be provided, and at each location a series of events may or may not happen, depending on the choices of the user. The network structure is used to map events to locations in a story. The story is interlinked in exactly the same way that the map is structured.

Each location is given a description and a series of rules (Cirino et al 1994-5). In Figure 13, shows an example of the network structure. The user may choose to go to the warehouse, before going to Mr. Chan's. This choice leads to the discovery that Mr. Chan is involved in smuggling, which he hotly denies. However, if the user goes to the park before going to Mr. Chan's, Mr Chan's murdered body is found in his house.

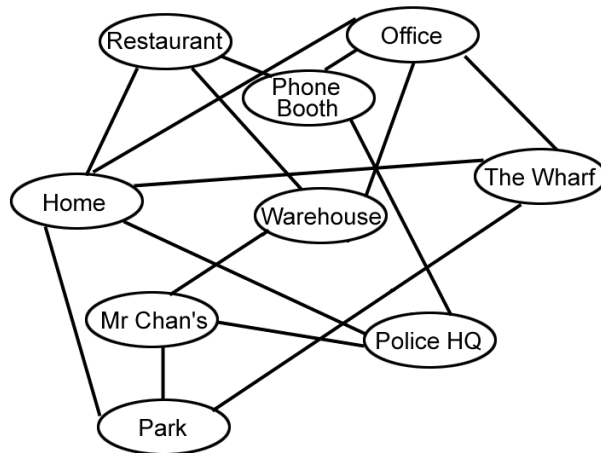


Figure 13. Location based organisation using the web structure (After Cirino et al 1994-5)

If the user goes to the wharf before going to the park, when he reaches Mr. Chan's the murderer is still there, leading to a chase to the warehouse, where the user discovers that the police chief is a crooked cop involved in smuggling. If the user goes to the Police HQ before going to Mr Chan's, he is told to meet the police chief at Mr Chan's. If the user hasn't been to Mr Chan's before, he finds the police chief giving Mr Chan some money. If the user returns to Mr Chan's from the park, then Mr Chan's murdered body is discovered. The park is the connection to the murder, and a clue to solving the story may be found there. If he has been to Mr Chan's before, and Mr Chan has been murdered, the police chief gives the user information that takes him to the warehouse.

What happens in each location is dependent on where the user has been before. The network structure is very effective in role playing stories but can equally be used for any interactive that requires a matrix of interconnected areas (Cirino et al 1994-5).

Parallel Story Lines

The parallel story structure allows several linear stories to be run at the same time, with links between the different linear paths. Depending on the choices made by the user, the different story lines can be traversed. The parallel structure is a way of creating multiple paths without the exponential number of alternatives that result from the branching structure (Garrand 1997).

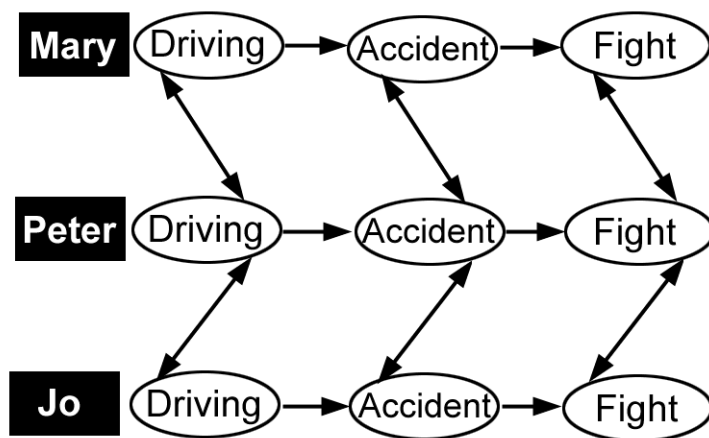


Figure 14. Parallel character perspectives (After Wimberley and Samsel 1996)

There are a number of ways in which the parallel structure can be used. Different perspectives can be provided on the one story, with the story itself remaining the same. For example the user may choose to follow the actions of one character, and then switch to another, obtaining a different relationship to the events in the story. The narratives of individual characters, when taken within the context of a whole story, change depending on the perspective from which the story is being told. The same story, when accessed from a different contextual viewpoint, can change in meaning, “depending on the structure and context of the user’s interaction with the system” (Don 1990 page 387). The traditional narrative structure remains intact, with the user switching between perspectives, paths or states at any point (Wimberley and Samsel 1996). The parallel flow chart can depict either locations or events. It is the script that delineates the different story perspectives.

Another use of this structure would be to have the same events depicted with different storylines. One storyline may be constructed so that the characters hide their true feelings, so that the user only gets the superficial view. Another storyline may show the characters true feelings, laden with emotion, secret thoughts and motivations, with the user able to switch between the two so that the psyche of the

characters can be exposed (Cirino et al 1994-5). The parallel story requires repeated viewing in order to comprehend the story in totality. Each use enables a comprehensible story to be assimilated, but each perspective allows the audience to piece together the complete story. There are many ways that the parallel storyline can be used in the interactive narrative, the limitations only resting with the creativity of the writer (Wimberley and Samsel 1996).

Worlds

So far, the flow charts have displayed a representation of a story's flow. But when the author is attempting to create a world, a different approach is needed. Stories do not necessarily have to be defined in terms of scenes, but instead can be created in terms of worlds. The story path for free worlds relies on an interconnected network, or matrix of relationships. The worlds are connected by events or tasks that the user must achieve in order to progress through the story. Each world is self contained, but there is a story thread, be it a theme, a goal or a mission that the user must follow in order to integrate the worlds into a complete narrative whole (Garrand 1997, Cirino et al 1994-5, Wimberley and Samsel 1996).

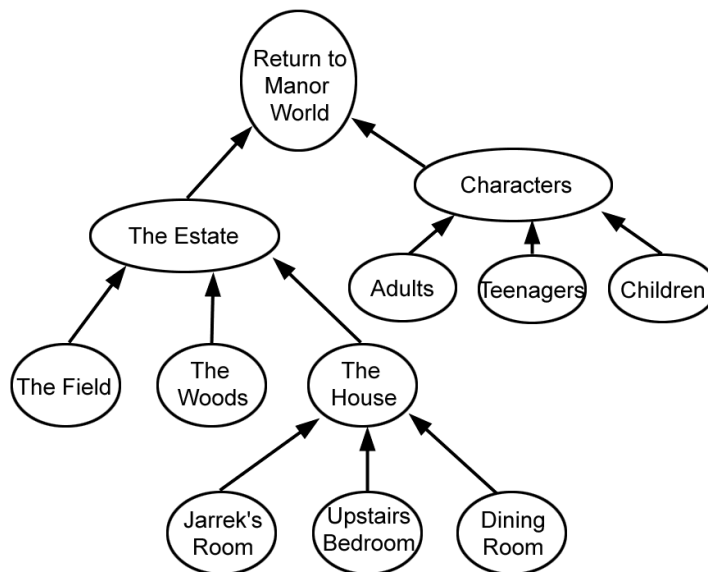


Figure 15. A World hierarchy

Writing definitions of the entities in the story creates worlds, be they locations, characters or objects. Rules are then associated with those entities that describe their properties and behaviour. The story that results is the free-flowing interaction between all of the entities that have been defined. The writer creates the definitions, and the interaction between the computer and the user creates the story (Cirino et al 1994-5).

In a free world experience, the exploration of the environment is sometimes more important than the goal that has to be achieved. This can be problematical for the writer as it can be quite difficult

to create a story structure. What the writer has to initially determine is the overall objective of the story and construct the environment and event structure accordingly (Wimberley and Samsel 1996).

The writer should take a top down approach when writing a world, moving from the most general to the specific. Each category is defined, with sub-categories or refinements to that category in the levels below. One way of organising a world is to break the story into its most basic categories, that of the characters and locations, and continue the refinement from there. Figure 15 describes a mystery that takes place at an English country manor, but instead of being a narrative flow, the chart describes definitions of characters and locations (Cirino et al 1994-5). The chart represents relationships between the different entities in the story, rather than a linked narrative path.

Creating objects, behaviours and relationships between them is an object-oriented approach rather than a procedural one. It creates a less structured form of interaction. Each step is not laid out for the user to follow, he or she has to interact with the elements individually in order to build up a comprehensible story (Cirino et al 1994-5).

In many interactive stories created with the world paradigm, movement between each world or event site is restricted so that the user has to accomplish a series of tasks in order to progress. In this way narrative action is controlled by the author, with an aspect of linearity introduced. World X cannot be entered until the user has done A and B in World Z. This use of constraints creates narrative cause and effect in the world, and hence a loose story structure. If short linear sequences are included, such as snippets of exposition through video, the user is able to assimilate the goals of the interaction and involve himself or herself in a very intense, explorative and thought-provoking story structure.

Simulations

Simulations are stories that evolve entirely depending on the actions of the user. They do not use the linear narrative structure of beginning, middle or end, because the outcome of the story is not reliant on the writer. In the simulation, the writer sets up an environment with a set of functions, and the user decides how to use those functions. In a sense, simulations involve no pathing structure, as every path is possible (Wimberley and Samsel 1996).

An example of a simulation is *SimLife*, where the user plays God, and is able to construct creatures by creating their genetic traits, physical appearance and mating habits. The user then releases the creatures into their virtual world and observes how the creatures evolve (Wimberley and Samsel 1996). *SimCity* is another in the series of simulations, where the user is the government of a society and, depending on the size of the community, has to create infrastructure to support the

population. The user has to balance monetary issues with social welfare in order to construct a balanced society. If the city becomes bankrupt, then the user is an ineffective governor. There are also numerous flight simulators and space war simulators on the market, such as *Terminal Velocity* (Randel 1995) which is essentially a “shoot-em-up” with linear expository sequences between the various simulated worlds.

Simulations use the calculating power of the computer. The user is able to adjust a set of variables, which alters the narrative outcome. The skill is to manipulate the variable so that the outcome is not, in the case of *SimLife*, extinction; in the case of *SimCity*, anarchy or bankruptcy; and in *Terminal Velocity*, being blown up.

In simulations the writer has to define all of the interactive elements and define characteristics for each one. The screenplay could well resemble a rulebook, which the programmer then takes and works into a functioning program. Some interactive stories incorporate simulations as part of an overall narrative structure. *Ingenious* (Allen 1997a) which was written by Ian Allen has five story lines, two of which are essentially simulations. *Ingenious* is a science based interactive, where the user is invited to explore five different scientific issues. Three of the paths take a multi-pathed structure, with a level of linearity and branching. One of the simulations is bush fire fighting, where the conclusion depends on whether the user is able to put the fire out or not. (Allen 1997b) Using a variety of story structures in this way, the writer is able to create a combination of linear narrative structure and free flowing interaction. The endings in *Ingenious* are not conclusive, as the writer felt that the story should reflect life, and allow the user to come to their own conclusions about the issues investigated in the different story paths. *Ingenious* is due for release in 1998, from ABC Multimedia.

Example Flow chart: Meetings with Luminous Dogs

The tools of flow charting and story structure are essential in creating a manageable interactive project. As mentioned before, each writer uses the flow chart in a different way. In Figure 15, taken from Steve Connard's *Meetings with Luminous Dogs* (1994), it seems at first glance that a web structure has been used. Each location contains a scene with numerous options for the user. However, the arrows on the diagram indicate that the story is basically linear. Once a decision has been made, the story progresses in a linear fashion, branching at each decision point. So, this story really combines branching with parallel story paths. Steve describes this project as an interactive movie, not an adventure game, so the linear structure was derived first. He calls the overall story “multi-branching and linear-ish” (Connard 1997). It is strongly based on the three-act play, with points of conflict and convergence at the end of act one, with the story lines diverging at the end of act two, into the branched endings. There are three paths and three endings to the story, but there is only one ultimate ending. The fourth “ending” is a dead end, or a loopback, where the user

returns to a particular place in the plot and has to replay the movie in order to achieve a true ending. The full flow chart forms part of the design proposal and can be seen at the end of Appendix One.

Steve Connard has taken full advantage of the computing medium, in that the computer detects whether the user has played the game before, and if so, the user is given the option of taking the top story path, which achieves the ultimate ending. The top path is not available to the user on the first game, and as a result the user will not find the final outcome the first time they play. This is one way of encouraging the user to revisit the game and provides a different interactive experience with the second game.

Meetings with Luminous Dogs is basically a mystery, where the user is able to access the inner thoughts of the main characters. Viewpoints can change from third person to first person browsing in order to explore certain environments. But the browse time is finite, and if the user does not find a vital clue within a certain amount of time, another character finds it for them. This finite browsing limits the amount of time the user has in any environment and maintains the narrative pace. The theme of the story is that of nature spirits, which Steve Connard describes as being “benign and malignant”. The benign spirits are birds, and the malignant spirits are lizards. In one of the endings, the user is transformed into a lizard, and is unable to return to human form. This ending is essentially a short-circuit, where the user meets his or her untimely end.

Meetings with Luminous Dogs currently exists as a design proposal, flowchart, sample scene, and 400-page script. Steve hopes to proceed further with the development, after having his script for *Cyberswine* developed by Brilliant Digital Entertainment, due for release in 1998.

The process of flow-charting can be one of the most difficult things that the writer has to do in the interactive project. Mapping the intricacies and various outcomes of the interactivity has been described as “hellish” (Wimberley and Samsel 1996).

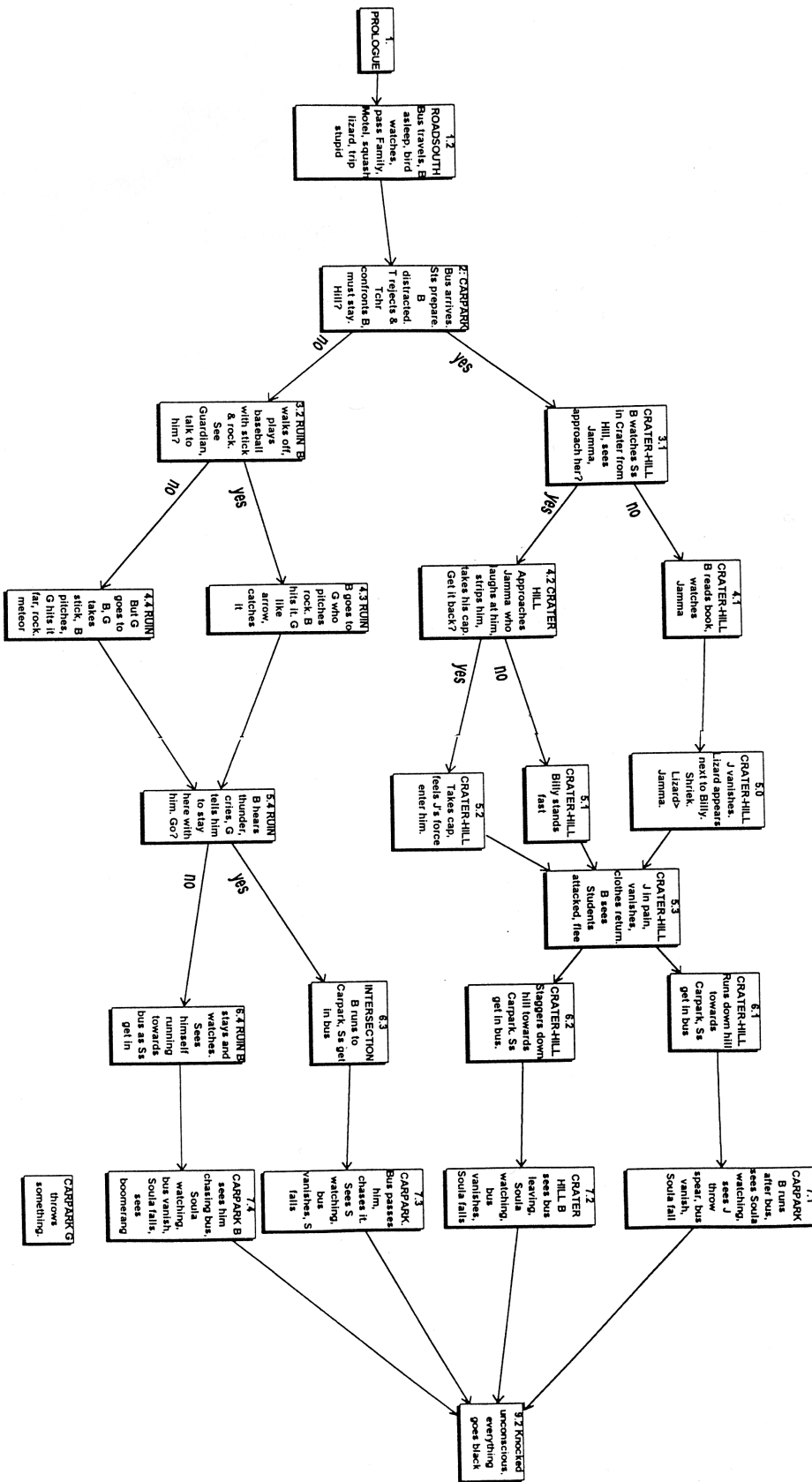


Figure 16. Act One flow chart from *Meetings with Luminous Dogs* by Steve Connard (1994)

3.4.2 The Design Proposal

The design proposal is the document that the writer creates in order to generate interest and funding for their idea. It is used to “pitch” the projects to prospective investors, producers or publishers. The aim of a design proposal is to describe the idea, how it works as an interactive story, and what its expected place in the market will be. If the writer also wishes to produce or design the project, the design proposal should also outline their skills in those fields as well (Wimberley and Samsel 1996).

Often the hardest part of the design proposal to write, the premise forms the “hook” on which the remainder of the document hangs (Wimberley and Samsel 1996). Design documents also outline in general terms how the interactivity works, what type of story structure has been used, the point of view and any other unique features of the interaction, such as interface design options and navigation tools. Characters are also described where personality, physical features and history are summarised. The design document for *Meetings with Luminous Dogs*, as part of the character descriptions, has sketches of the various non-human characters so that the strange creatures can be instantly visualised. Objects and locations are outlined, and the reader begins to get a feel for the interactive environment as envisioned by the author. The plot is briefly summed up, (and here brevity is essential) but the summary should encapsulate the major events in the story.

Other elements that could be explained in the design document are any technical features of the story: such as 2D or 3D rendered images, multi-user capabilities, whether the story has the option for on-line gaming, what development tools are going to be used and what platform the game is targeted towards. Each platform – be it a CD-ROM, Sony Playstation or Sega Saturn – has its own technical limitations that can determine the way in which the final product is created. It is also important to include any unique marketing strategies that will promote the product. Finally, who is involved with the product can be as much of a selling point as the product itself. Team biographies should be included so that the prospective investors can evaluate the main creative talent in the project (Wimberley and Samsel 1996).

The design proposal should also contain some sort of description of the story structure and narrative path, usually outlined in a flow chart. This enables prospective investors to gain a feeling of the scope and complexity of the story at a glance, without having to wade through pages of script.

3.4.3 Scripts

There are two scripts that the interactive writer has to prepare. One is the prototype screenplay, an example of which can be found in Appendix Two. Prototype screenplays essentially are a snippet of the total work. They are usually about 10 to 15 pages and form an example of the interactive writer's style. The prototype screenplay is usually one defining scene taken from the larger interactive screenplay and demonstrates not only the interactive capability of the project, but the characters, settings, objects and one or two of the events of the story. Because the prototype screenplay is necessarily incomplete, it is merely a taste of better things to come. Performing two functions, it acts as a demonstration of the writer's ability in the interactive field and can also be used to create an initial working prototype of the project (Wimberley and Samsel 1996). In Australia the preliminary working prototype is often called "proof of process", but in the USA, it's called a trailer. If the writer is new to the interactive market, a sample script is often not enough to attract investment, and the "proof of process" is needed to convince investors that the writer and production team have enough experience and talent to produce the title.

It is in the interactive script that the historical links to the cinematic become apparent. The form of the script is almost identical to that of film and television. But there are differences. The interactivity has to be built into the screenplay. That necessarily entails careful labelling of the scenes to correspond to the flow chart, and an indication as to what the options are at any branching point. What point of view the user is expected to take should be indicated, as well as any change in point of view. Cinematic terminology, such as the cut and the track indicate where the author takes control of the visual language. However, "cutting" may be changing the point of view, allowing the user modeless browsing within a scene, thus freeing up the interactivity.

Because the interactive script is in its early days, its form has probably some way to go before it becomes standard. In the same way that the scripts in the early days of television drew much of their form from radio scripts (where the instructions for the sound man were created in a separate column to that of the visuals) the interactive screenplay is sure to evolve as well. Cumbersome and non-logical artefacts from the cinematic screenplay will eventually disappear, and the interactive screenplay will have evolved into its accepted form (Wimberley and Samsel 1996). Not only is the screenplay in a process of evolution, but the production roles are also. Ian Allen, (1997b) writer of *Ingenious* remarks that the role of the writer has become merged with other roles within the production team. He titles himself a 'content director' rather than a writer, because, although he wrote the screenplay, he saw his role as being much broader. He also helped the designer create the storyboards, linked them to flow diagrams, and aided in the overall production of the CD-ROM.

Scripting is the process of defining every possible action, consequence and conversation within the interactive design. Scripting takes an enormous amount of time, and because the interactivity is often very involved, it is useful to have designed the flow chart before starting. However not all writers take this approach. Because the script is usually non-linear or multi-branching, if one location is used for multiple scenes the writer should provide all possible actions within that scene in one section of the script so that the programmer can design every use for that location. If part of the script is to be filmed using live actors, a second copy of the script may need to be provided without the programming instructions, as the Director does not need to know these details (Mueller and Morrison 1995).

There are very strong similarities between the interactive screenplay and that of film and television, but there are also significant differences. The first major difference is the condition statement. (See Figure 17) Condition statements detail choice by the player. Each choice is placed on a different line in the script, indicating where each choice takes the user (Wimberley and Samsel 1996). Condition statements are similar to IF...THEN statements in computing programs and are essentially a switch, moving the forward flow of the plot in a different direction.

Dialogue in the interactive screenplay takes its form from the cinematic screenplay, and all the rules of that genre apply (Mueller and Morrison 1995). The user is also often allowed to choose between sections of dialogue and all of the choices and responses should be included in the scene script.

The scene location is a brief one-line outline of the scene number and where the action takes place. It is a standard film and television scripting device, often preceded with INT or EXT, indicating whether the scene is filmed in the studio or on location. In interactive media, the cost of creating an interior or an exterior scene is similar, so in this case convention has been discarded. The scene description also usually describes whether the scene is DAY or NIGHT, which is a guide for the designer and/or director as to the lighting conditions and atmosphere of the scene.

The technical direction is provided for the programmer. In this case it indicates a change of point of view, where the user is able to browse the environment. Technical directions are essential guides and should be kept short and concise so as not to overload the script. The programmer also uses scene transitions, be they a wipe, cut, fade, dissolve, or special effect. In television and film these directions are used by the vision mixer or the editor, a role that in the interactive drama is incorporated in the programming.

Scene transitions are written in exactly the same way as they are for a television screenplay, usually in bold capitals aligned to the left-hand side of the script;

FADE IN:

whereas transitions out of a scene are to be found one line down at the right hand side of the script;

CUT TO:

Notice that in Figure 16 the CUT TO: has been changed to a Go To command, with the various options outlined. This indicates branching. Depending on where the user clicks, they can go to different sections of the story.

Direction in an interactive script is aimed at either the live action director, if there is filming to be done, or the designer and programmer, if the title is pre-rendered or part of a games engine. Direction describes what is happening in or to the shot. In Figure 16 the direction (OS) indicates that Billy is out of shot when the dialogue takes place. This is because in the previous technical direction the viewpoint was switched from third person to first. The user is now viewing the interactive movie through Billy's eyes. Direction also entails the use of the pan, tilt, dolly or zoom, as a way of intensifying action and using visual grammar to create narrative content.

The dialogue is placed in a central column, whereas the descriptions and directions are aligned to the right-hand margin. This is a traditional scripting device. Dialogue should be written the way that natural language is spoken, with all of the inferences and innuendo contained in everyday conversation. Well written dialogue reveals insights into characters, the outlining of motivation and social attitudes (Wimberley and Samsel 1996).

Scene descriptions are short paragraphs that are a brief description of what the scene looks like. This is where the author is speaking directly to the designer, describing what is in the scene, how it looks, what time of day it is, and the general atmosphere is to be portrayed. A good example of a scene description can be found on page two of Appendix Two. If the scene is to be photographed or filmed, the scene description is aimed at the person responsible for the overall look of the image, be that the cinematographer, director or set designer.

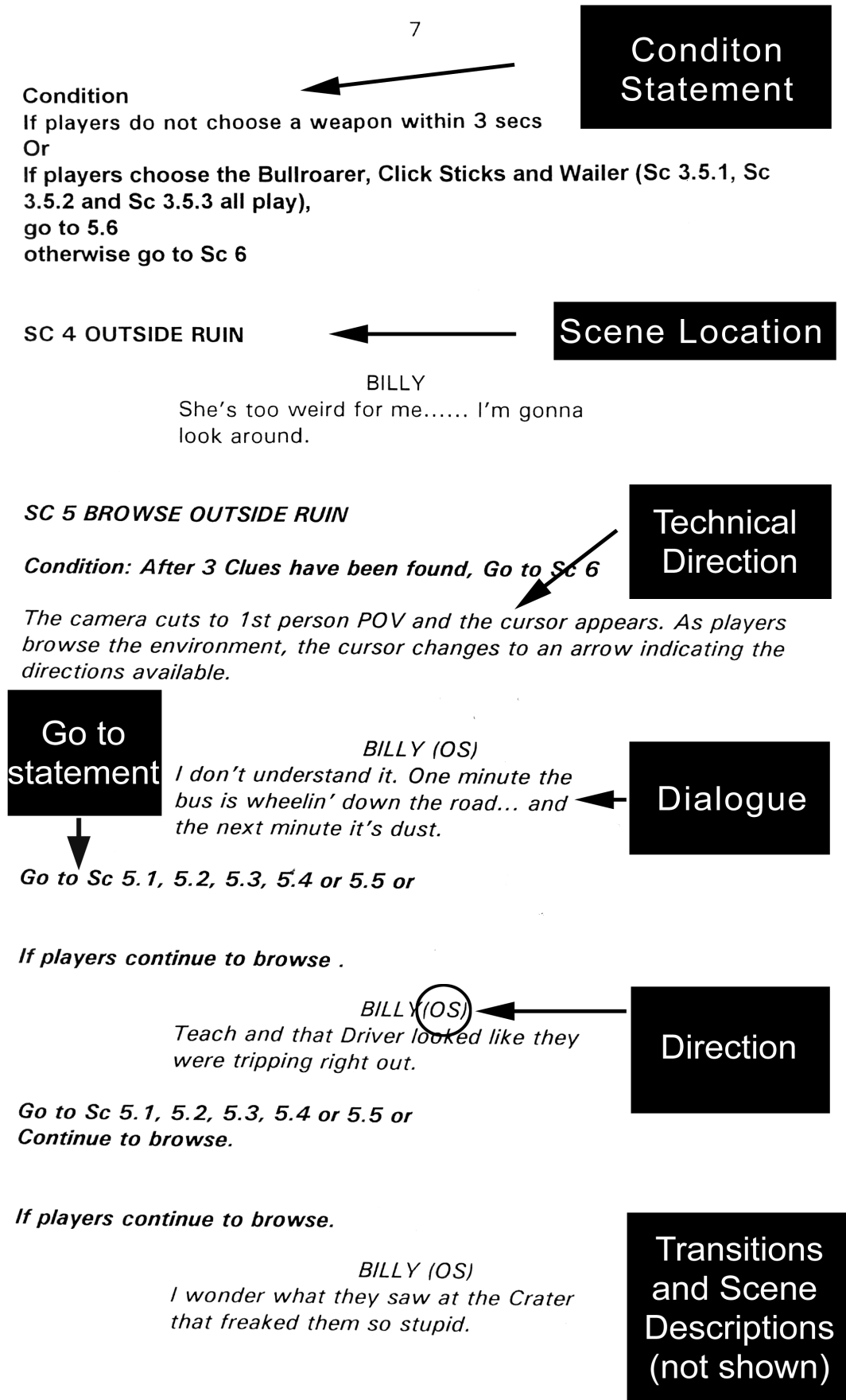


Figure 17. Script example from *Meetings with Luminous Dogs* by Steve Connard

Writing the interactive script can be an enormous challenge. Creating the various sequences of action and flow between scenes requires logical and lateral thinking. The writer has to consider what happens if the user doesn't find a clue, or a needed object? Does the action stop, can the user go back and get it? Or are there alternative ways of allowing the user to circumvent the problem. If a character is irritated by another in an earlier scene, does that affect their attitude in later scenes? Does it branch the story, or can the user choose the verbal and emotional responses? Because all of the choices in an interactive story are constrained, guided by the script, it is necessary to allow the user to feel that they are having an impact on the story. They need to feel that their interaction does make a difference, even if that difference is a wily plot construction by the author (Mueller and Morrison 1995).

3.4.4 Storyboards

It is at the storyboard stage where the creative control for the interactive project begins to leave the realm of the writer and moves to that of the design and production team. The storyboard is the visualisation of a concept, the "shots" where the visual language to be used can be understood at a glance. In television and film production, the director usually conceives the storyboard in conference with the producer and designer. The final storyboard is created by the designer, so that the production team can get an instant assessment of the overall look and feel of the project. This process does not necessarily produce only one storyboard. The images, look and flow of the project may be refined and changed many times before the final storyboard is produced. The storyboard is a way to gauge how the visual aesthetic of a product will work, before launching into a full production schedule. Storyboards are particularly vital for any production that requires expensive digital effects. A project may proceed or fail in television on the strength of its storyboard.

The storyboard is also a production guide, where each element, each different scene is described, demonstrating how the narrative elements work together to create a unified "look". Figure 18 is the storyboard used for a commercial for Apple Computer, which was aired only once, during the Super Bowl in 1984 (Berger 1997). Although much smaller in size than an interactive storyboard, it conveys at a glance the different elements of the story. Although this is a linear storyboard, the effective use of the visual language is evident. The commercial started with the words "1984" on the screen, before cutting to the very long shot of the marchers tramping down a tunnel.

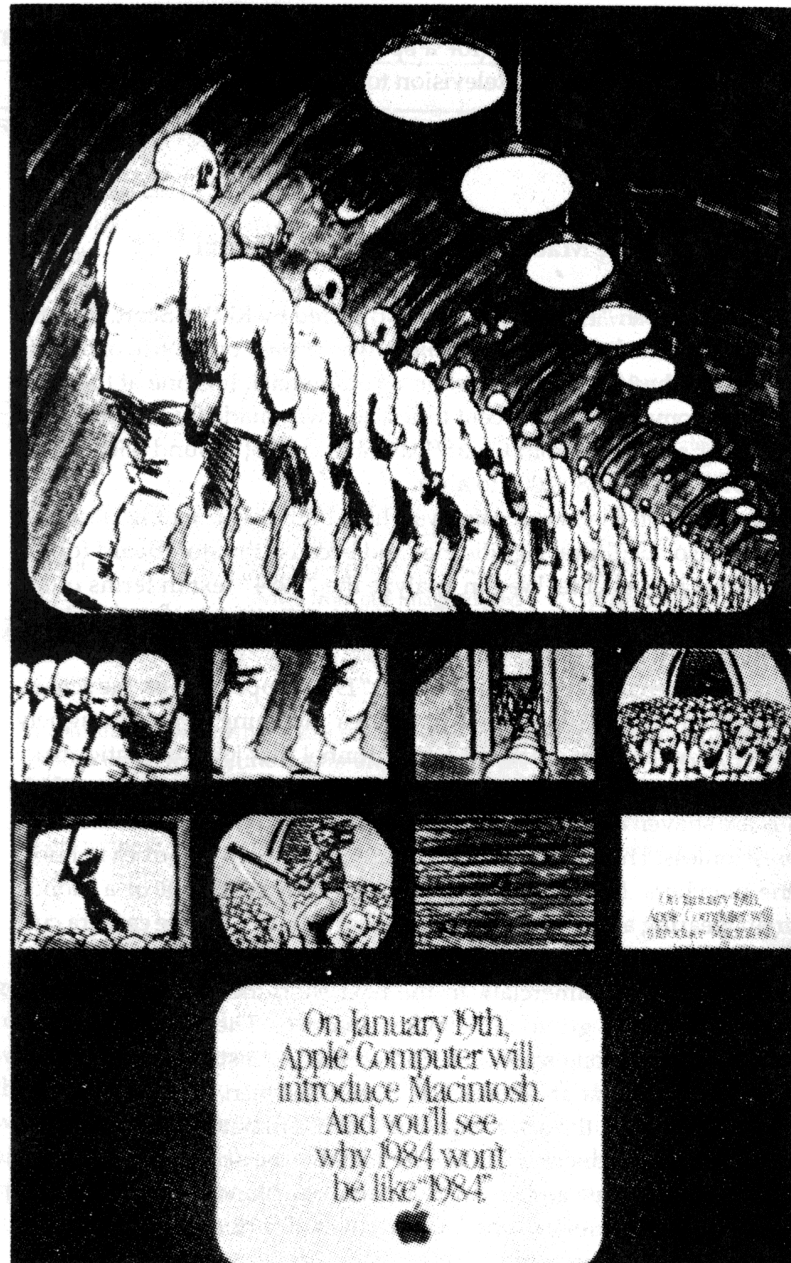


Figure 18. Storyboard for Apple Computers Advertisement (1984)

The lighting is harsh, bleak. The men are bald and dressed in grey uniforms. The long shot establishes an overview of the scene, depersonalising the figures. The next shot is a close up of the marchers' heads. This intensifies the emotion; the viewer feels that the walkers are in some sort of institution. The next cut is to an extreme close up of the walkers' boots. Notice how the shots get tighter and tighter, focusing in on the central theme of uniformity. Of course, the men march in unison. The third shot is wide, establishing the men going into an auditorium. Not only introducing visual variety, it also adds narrative, describing the location, and the giant television screen in the background. The next shot is also long, showing the mass of inmates seated, staring at the screen (Berger 1997).

The fifth shot in the storyboard is a medium wide shot, showing the woman swinging an object. Arthur Berger (1997) who describes this advertisement in his book *Narratives in Popular Culture, Media and Everyday Life* mentions a number of shots that are not in this storyboard, of a blond woman running from uniformed guards. The second shot of the woman swinging the object, which looks like a piece of wood, was replaced in the advertisement by a sledgehammer. The third last shot in the storyboard is a shattered screen. In the actual advertisement the scene cut to a shot of the skinheads with looks of astonishment on their faces (Berger 1997). Finally, the slug line, "On January 19th Apple Computer will introduce Macintosh. And you'll see why 1984 won't be like '1984'." Thus, the bleak future as outlined in George Orwell's novel is averted. The aim in relating Berger's analysis is to show how the visual language is extremely well visualised by the use of storyboards. Although not all of the shots were shown, there is enough content to get an accurate idea of the story.

The same holds true for storyboards created for interactive design. They should be approximations, rather than the final artwork. Not all of the elements may necessarily be present, but there should be enough of an idea conveyed so that the production team can start making the product with a clear objective and design style in mind. Storyboarding is the way to define and refine the visual elements of the product. Once the storyboard is completed, it is primarily used by the designer, in conjunction with the flow charts as their "map" of the look of the story. It is also used by the creative director or producer to outline any design elements that need to be altered as the design process proceeds. Once the artwork is completed, the programmer uses the storyboard in conjunction with the conceptual model so that the interactivity can be programmed, and the correct graphics (or code) can be inserted in the appropriate scenes.

Storyboards can be used in different ways for interactive design. The linear storyboard (as in Figure 18) can be used for the introduction and exposition sequences. However, for the non-linear scenes, storyboards are sometimes organised in flow chart form. These can provide a design template for the entire project, where the links between each scene are drawn between each screen "shot". This system was used for *The Bush Tucker Man* CD-ROM, and the producers liked it so much they used the idea as a navigation tool for the interactive documentary (Zwar 1996).



Figure 19. Screen Shot from *The Bush Tucker Man*

Each shot represents a different menu or environment that can be explored by the user, and conveys not only the navigation at a glance, but also the design style. The actual storyboard for this product used twenty different images, each representing a different scene. Not every element within that scene was included in the storyboards, but each image worked as a “place holder”, a reminder of the functionality and design style of each scene.

Storyboards are not only images. Each frame can have explanations or captions underneath, outlining elements of the interactivity, and how the different pieces work together. They are also a very useful way of presenting the project to a client or investor (Garrand 1997).

Not all writers use flow charts and storyboards. Some use a system of index cards, which are laid out on the floor or pinned to a wall, so that the scenes can be rearranged at will. Each scene is described on a card, and sometimes the writer pins string between the cards to indicate the narrative and interactive links. Once the organisation is structured, and the elements are in place, the writer merely has to take each card and write each scene, using the card as a memory prompt (Garrand 1997).

3.5 Narrative and the Conceptual Model

The conceptual model is created by the writer, in conjunction with the design and programming team, and often a psychologist. The conceptual model is the overall concept of how the program works. It is used to create a comprehensive design document, on-line help, and user manuals. In the creation of the conceptual model, the writer has to form in his or her mind an idea of the mental model that will be created by the user when they access the program. A mental model is the user's idea of how they think the program works, and will be discussed in detail in the next chapter. As each user will form his or her own unique mental model of the program, it is impossible for the writer to predict every single user's behaviour. As a consequence, the writer has to construct a generalisation or stereotype of how they *think* the typical user will behave. This use of stereotype is one way that traditional narrative devices can be used to help the writer or developer in the construction of the conceptual model.

The conceptual model does not explain the ins and outs of how the program is implemented in computer code, that is, how the program is built. That is the programmer's job, based on their interpretation of the conceptual model as outlined in the design document. The user does not need to know the inner workings of the program, they just want to know how they can interact with the story. The conceptual model determines the interaction, that is, how the interface works. The conceptual model maps the behaviour of the program, against how the user thinks the system *should* work. If an interface icon looks like it should do X, but instead does something completely different, then the conceptual model is at odds with the user's expectations.

If the interface is easy to use and intuitive, the conceptual model has been accurately mapped against user's idea of how to interact with the program. If the conceptual model instead reflects how the system is programmed, the interaction with the story will be extremely difficult and non-intuitive (Cooper 1995). That is why many early computer programs were very difficult to use, because they were designed by programmers, who have to construct the program in a very particular way in order to get it to work. Often this structure is evident in the interface, reflecting not how people think, but how the computer works.

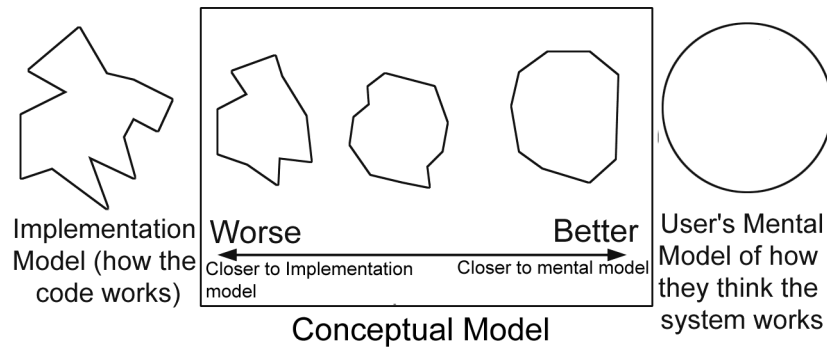


Figure 20 Mapping the conceptual model to the user's mental model (After Cooper 1995)

The relationship that the user has with the conceptual model is similar to a reader's relationship with literature. In literature, the richness of the narrative experience is often related to the breadth of prior reading undertaken by the reader. So too with computer interaction. The user brings to the interactive narrative a background that incorporates all of the programs and interactive stories that they have so far used. Previous experience creates a deeper understanding of the issues and methodology used in the computer interface. This helps to build the user's mental model, the expectation of how the system works. The richer the prior knowledge, the easier the learning of a new interface becomes, and the more meaningful the narrative experience. If the interface mimics a familiar way of doing things, if the interaction and interface is similar to existing titles, learning the new program becomes even easier.

3.5.1 The Design Document

It is in the design document that all of the traditional narrative devices, visual language and production tools come into use. The design document is the technical specification and is essentially the blueprint for the interactive design. The first implementation of the conceptual model – the design document – incorporates everything that the production team needs to know in order to create the interactive story. Primarily the writer creates it, but the process should involve consultation and advice from the entire production team.

In most computing *applications* the conceptual model at the system design stage is created by a series of data flow diagrams, flow charts, decision trees, pseudocode and time dependency charts. These tools are useful for the programmer and the interface designer to construct a consistent and comprehensive program, based upon the specifications as outlined in these documents. These diagrams form a guide for the programmer and designer to follow in order to construct a prototype (Kowal 1992). They are usually very technical documents, using computing

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terminology, and are difficult for the non-expert to interpret. System design documents form the complete specifications, the interface, the interaction, and the look.

But developing the interactive narrative brings together a team that may not have a strong computing background, and the language that is commonly used by programmers and system engineers is often foreign to the writing and production team. These may include book publishers, music professionals, entertainment producers and artists, each with their own vocabulary and agenda. So the design document for the interactive story has to be created in a way that is useful and meaningful for all of the team members (Wimberley and Samsel 1996).

Narrative can be used instead of technical specifications, and indeed at the later, user-manual and teaching stages of the conceptual model. This form of narrative should be intended for use not only by the technical designers, but also for a broader audience, the users. The specification has two objectives, communication and comprehension (Kowal 1992). The *story* that is being told is that of the system design, how it works, how the interface will be used, and what can be expected of the program. It is by necessity non-fiction, and accurate and exact information must be expressed.

Here Aristotle's theories of beginning, middle and end are useful. At the beginning the writer should outline the project and the *objective* of the interactive story. It is essentially a one-paragraph abstract that sums up the theme of the work. As in the design proposal, this hook is important, as it generates user interest and encourages further reading (Garrand 1997). Because the funding for the scriptwriting and the production can be separate processes, the design proposal is often vital in the generation of further investment.

Having hooked the reader's interest, the next step is a *story summary* where the concept and objective of the game is outlined in further detail. How the user will shape the narrative outcome should be described here. If the project is an interactive movie or drama, and relies on the linear storyline, the linear narrative should be explored in detail (Wimberley and Samsel 1997). If the structure is more non-linear, a world or simulation, then the overall description of the events and highlights should be outlined here. The language should be rich and descriptive. Although it is only a summary, it is a place for the writer to showcase his or her storytelling skills.

If there are characters used in the story, a full set of *character descriptions* should introduce the reader to their protagonists and antagonists. The character description still forms part of the exposition stage of the design document, where physical details, mannerisms, personal histories and relationships between the characters are outlined (Wimberley and Samsel 1997).

The next section is the *interface methodology*. How the user interacts with the environment should be outlined here. This could include whether there are graphical buttons, any digital

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movies or QuickTime VR environments. It is a good place to include a screen shot or design sketch, so that the reader gets an idea of what the interface will look like (Wimberley and Samsel 1997).

The final section of the exposition part of the design document is outlining the *design tools*. This section demonstrates the technical skill and ability of the production team, as well as any proprietary software, games engines and design programs that will be used in the title (Wimberley and Samsel 1997).

Now that the exposition is over, more detail should be introduced in the design document. The reader has a general idea of the story, but no idea of the detail. *Flow charts* outlining the navigation through the story should now be included, describing all of the interlinking sequences, loopbacks and branches of the story (Garrand 1997). This involves plot, temporal and causal relationships between events, and all the intricacies of character conflict and narrative tension. Flow charts help the reader to visualise the interaction and narrative paths of the story. It's also a good reference for when the reader has to embark on the next step, that of the interactive screenplay.

The *screenplay* is usually a huge document, running to hundreds of pages, and forms the bulk of the design document. Everything that happens in the interactive narrative has to be outlined in this section. All of the characters, objects, interaction and multiple storylines. Anything not included in the interactive screenplay will not be present in the final product.

The next step in the design document is to include any examples of *design elements*. These may include concept sketches of characters, environments, objects, photographs, any digital video or interface screen shots (Wimberley and Samsel 1996). Descriptive language can be used to explain to the visual look and feel of the story, creating in the designer's mind the visualisation from which they will create the final look. Metaphor helps create the strong evoked image, and the use of genre describes what *sort* of environment should be created. The language used should be simple and unambiguous.

Once the artwork has been showcased, it is time to show how the various media fit together. The *storyboard* creates an instant visualisation of the story and is combined with short written descriptions of the events in each scene, snippets of dialogue or user instructions (Wimberley and Samsel 1996). It is here that the visual language becomes apparent, and how the images start to work together to create a cohesive design structure.

No interactive design specification is complete without dealing with the *finances and timetable*. These form the denouement of the design document. Marketing strategies for the product and expected sales figures, along with market research, should be included here. A production schedule should be outlined, with set dates for expected stages of completion, along with budget spreadsheets and charts.

Team biographies form the conclusion of the document. Who is involved with the project, what their role will be, and their background and experience.

The design document forms the master plan of the interactive project. It is used by the entire creative team to produce the interactive title. However not all design documents are produced prior to production. Some evolve along with the production process and are in a constant form of evolution. Design documents should be simple, so that each member of the design team knows what is required. They should be straightforward, so that each element fits together logically. And they should be deep, every detail has be included in this document (Wimberley and Samsel 1996).

3.5.2 The User Manual and Help

Because the specification has been created for the design team, it is disadvantageous to supply it to the end user of the interactive narrative. It could in effect ruin the narrative experience, as all the levels of interaction have to be specified. What the customer of an interactive narrative requires is an abbreviated version, outlining how to use the program in terms of actions and commands, without giving away the story itself.

This particular manifestation of the conceptual model is the user manual. The user manual should exactly map against the conceptual model implemented and created by the production team and represented by the design specification. In turn, the conceptual model must represent the mental model created by the user upon accessing the program. The user manual is essentially a teaching tool, where the user can learn how to use the program. Explanations in the user manual should be straightforward and unambiguous. If a sequence of actions needs to be undertaken, they should be explained in detail, without leaving out a single mouse click or keyboard stroke. Diagrams should be used to explain the interface and any narrative elements that have special significance.

The final part the writer has to play in the production of the interactive narrative is in the creation of the help pages. These are programmed as part of the product and are in essence instructions on how to use the interface. The help pages may show the various “bad guys” in the story, and what their strengths and weaknesses are, but should not indicate how the user can defeat them. The help pages should be written simply and concisely. If the help section is describing how to use a button or an icon, the writer should ensure that an illustration of the button is included. It is often very frustrating when the help pages outline how to employ the “use” button, when the novice has no idea which button “use” actually is!

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If the conceptual model maps correctly, there should be little need for the user to frequently employ the help pages. So if the writer finds himself or herself creating a help dictionary, there is something amiss with the interaction design. Help pages should also outline how the user can save their game, how to skip linear exposition sequences and quit the game.

3.6 Feedback

The beauty of multimedia is that it incorporates movement. The user moves through a screen environment, interacting, engaging with the virtual world. But the movement is physical as well as virtual, with the user constantly inputting new information into the computer. It's a constant process of feedback, where the virtual world responds to the user's actions, and visa versa. The emphasis in interactive design should be on the action that takes place within the environment, and what feedback the user has to undertake in order to achieve their goal (Laurel 1993). Designing the interaction is initially the writer's task, but its implementation rests firmly with the design and programming team.

The feedback in an interactive narrative transcends Aristotles theories of the diegesis (telling) and mimesis (showing), adding the dimension of *doing* to the equation. Certainly a story is being told in an interactive narrative, equally it is being shown, but most importantly it involves.

3.6.1 The Cursor

The role of the most commonly used input device, the mouse and its representation on the screen, the cursor, is important. The cursor, in many games, allows the user to manipulate, pick up things, and generally interact with the environment. Its representation can change to various navigation and functional icons, which help with the interaction. If a screen cursor is to be used in the narrative, some lateral thinking can be employed for ingenious icons and new uses for the cursor. An example of cursor-as-feedback is the game *The Seventh Guest* (Costello 1993) where the story is set in a haunted house, and the cursor is a skeletal hand, which aids in navigation, allows interaction, but also provides feedback as to whether the user is able to access certain areas of the game. Some areas are restricted until puzzles are solved in other rooms. The form that the cursor takes can determine what actions can be performed at specific times. It is a way to provide a non-static interface that is easy to use.

However, many interactives do not employ the cursor or its iconic representation in the action. The interaction within the environment may be in first person perspective, where the environment is viewed through the eyes of the character. The interactivity is through various

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actions that the character can achieve, integrated through a joystick, mouse or keyboard strokes. There is no cursor in this particular form of first-person representation, but the character's hands or weapons are often shown at the bottom of the screen, and the user, through the input device, manipulates the first-person character's actions. The difference in philosophy between the two forms of first-person viewpoint, one with a cursor and one without, is that the cursor-as-navigation tool denotes that it is the user who is interacting directly within the on-screen environment. Whereas the second type, where hands or weapons form part of the representation, connotes user-as-character, or role-play.

Another representation of action is from the third person viewpoint, where the on-screen character is manipulated directly through the input device. Here the user manipulates the character's actions but does not take on the attributes of the character itself. Therefore, the paradigm is not user-as-character, but user manipulating character. Again, the two methods can be used, in one instance, where the user's clicks determine where the characters go or what they look at or pick up. The mouse click essentially starts a very short linear sequence over which the user has no further control. In the second, the input device determines the character's entire movements, where every movement is in response to an action initiated by the user.

3.6.2 Input Devices

Feedback also involves determining which input device is appropriate for the interaction. The use of keyboard and mouse is restricting in fast paced action. The design considerations must include whether the input device is a joystick, or some other type of control panel. The input device may also be a touch screen, if the narrative forms part of an information kiosk at a museum or art gallery. The design of the story and the programming will depend on the narrative form. However, the form of input device should be established very early in the design process. Some interactives require the use of non-standard input devices, and consideration as to the availability and marketing of such devices should be a primary determination of the device to be used. The market for interactive narratives is worldwide, and the lack of availability of the primary input device limits the market for the story.

The input device required for a narrative should be tailored to the intended use of the program. Issues to consider are not only if the device should be a mouse, joystick or trackball, but also what type of joystick, mouse or trackball is appropriate for the task. Each input type has its own set of restrictions, and if the appropriate input device is not chosen for the task domain, the user will find interaction very difficult. Games like *Mech Warrior 2* require a joystick with a higher level of control and variables than most, and as a result this game in some releases was bundled with the type of joystick recommended for the game. Playing this game with a standard joystick leaves the player with increasing levels of frustration. Most input devices operate in a 2D manner, employing

only the X and Y co-ordinates for interaction, however increasingly a third dimension has been added, with twisting, rolling and speed controls added to the equation (Buxton 1987).

3.6.3 “Getting at” the Action

How the user interacts with the story through the interface, and how they navigate through the virtual space, is a primary issue when considering user feedback. The interface can form a frustrating barrier which the user has to tackle in order to “get at” the story. If the interface is not intuitive, or has functions that are complex and not apparent, the novice’s first experience can be less than fulfilling. However, many gamers appreciate an intricate and well thought out interface, where extra levels of involvement and interaction depend on learning which function button to press at the appropriate moment. So an interface should work on two levels, easy and intuitive enough to interest and involve the novice and to encourage future interaction, but with enough advanced functions to keep the experienced gamer involved.

The common click and advance system for interactive design, as seen in *MYST*, (Miller and Miller 1993) places the user in the odd situation of having to force themselves through the story. The user finds herself in a slightly adversarial situation, where the story has to be constantly pursued in order to be revealed. Some gamers find the narrative pace of *MYST* similar to being told a story by a narcoleptic storyteller, slow to an excruciating degree. However, placing the user in a position of viewer, where the story is revealed in a linear fashion with the minimum of interaction is also unsatisfying (Murtaugh 1996). The compromise lies somewhere in between, where the user is strategically presented with enough information linearly to provide exposition and a motivation for further interaction with the story.

3.6.4 Human and Computer Tasks

Interaction design should be aimed at stretching the user’s abilities, encouraging them to engage in the story, without making the task too difficult to accomplish. Too simple the action and the user gets bored with the story, too difficult, and the outcome is despair and frustration. The action should be designed with two questions in mind. Which tasks are to be undertaken by the computer, and which by the user? The user should “receive tasks which require initiative, judgment and heuristic reasoning. On the other hand, computers should get repetitive checking, calculations and data-handling tasks” (Sutcliffe 1988 pg. 61).

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Mixed tasks, those that require both computer and human components, require thought so that the interaction is meaningful. Interaction design involves constructing dialogues to display information, suggest options, give warnings etc. How the interaction is designed depends on the purpose of each narrative, but no matter the nature of the story, throughout the development stage user testing is important.

A further consideration in task design is that the user may require rests or breaks between periods of intense action. Sustained concentration leads to fatigue, and tasks should be broken at certain times, by a closure event. A closure event is a “short period during which the cognitive processor can be reset” (Sutcliffe 1988 pg. 63). These events should take place at the end of a logical sequence, at natural break points. If no such points exist, closure points should be imposed on long task sequences at intervals of two to five minutes, depending on the complexity of the task (Sutcliffe 1988).

3.6.5 Phrasing and Gesture

When to structure closure events in terms of action design depends of the phrasing of the story. Phrasing is a term most commonly associated with speech and music. “It determines the ebb and flow of tension in a dialogue. It lets us know when a concept is beginning and when it ends” (Buxton 1987 pg. 372). In narrative, phrasing is the rhythm and meter of both the words and action and is also important to consider when designing the human-computer dialogue. If the designer considers the rhythm involved in human gesture, and if actions from the input device can be completed in a whole and complete movement, then an effective use of phrasing has been employed. If the movement of the act of interaction is fluid, and tasks are constructed so that there is a connectivity between the movements, then muscle memory can be developed in the user as part of the interaction (Buxton 1987).

Phrases also work like memory, allowing associated tasks to be chunked together. This can be exploited by allowing connected ideas to be expressed with connected physical gestures. Individual button presses, typed commands and pop-up menu clicks can be considered singular entities within the interaction, the “words” in the dialogue. The problem is that humans speak in sentences, and compound tasks are difficult to understand in terms of singular commands. If these commands can be related to the computer in terms of a fully developed gesture, then repetitive unit tasks can be eliminated, and a complex dialogue can be established (Buxton 1987).

“During a phrase there is a state of tension associated with heightened attention. This is delimited by periods of relaxation that close the thought and state implicitly that another phrase can be introduced by either party in the dialogue” (Buxton 1987 pg. 372).

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William Buxton (1987) discusses the physical dialogue with the computer in terms of the phrase. An example he uses is that of the pop-up menu. A click activates the menu, then a drag makes a selection, and the mouse button release confirms the choice. Because this associated group of movements requires muscular tension as well as attention, the mode locked quality of this dialogue does not interfere with the interaction. When an action is mode locked, further interaction is prohibited until the action is complete. The frustration often associated with mode locked dialogues, Buxton argues, is not the dialogue per se, but the gestural quality of the physical movement involved in the interaction. "In a well-structured manual input there is a *kinaesthetic* connectivity to reinforce the *conceptual* connectivity of the task" (Buxton 1987 pg. 373).

Phrasing is also part of the narrative tempo or pace of the story. Because the interactive experience can be 80 to 100 hours of gameplay, and that's only in the first game, the narrative pace necessarily slows to that which one would expect in a television mini-series. Much of the exposition can be dealt with the first time the user accesses the game, allowing a fast narrative pace on subsequent plays (Garrand 1997).

One of the problems with designing action in an interactive narrative is that the user's behaviour is unpredictable. Because their role has become an active one, their participation is now crucial to the outcome of the story. The design team should anticipate the user's unpredictable behaviour and create some sort of response that is integral to the narrative structure. This may include audible warnings, visual alerts or direct character interaction with the user, if the user's actions are inappropriate. The action must be constructed so that no matter how the user interacts, at the end the story feels complete and finished, closure in the narrative sense (unless of course the authors take a post-modernist view). The user should feel that their actions within the virtual environment are relatively unconstrained, yet no computer program can be entirely modeless (Laurel 1993). The thoughtful use of physical gesture allows the user's attention to be diverted from the fact that some actions are prohibited. Thus, a more ecumenical connoted world is established.

3.7 Narrative at the Interface

A narrative distinguishes itself in that there must be a presence of a storyteller, either overt or implied. A traditional oral storyteller "used a pattern of recurring themes and formulas as mnemonic devices to create an episodic structure" (Don 1990 pg. 386). Heckles or comments from the orator's audience could trigger new information or diversion from the main plot. The similarities with the interactive narrative is that with each telling the storyteller changed the story slightly, using audience reactions and feedback to colour the story itself. The situation and the

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process and place of the telling could also be incorporated into the discourse. So too the interactive narrative incorporates the responses from the user within the story (Don 1990).

Although the design of an interactive involves portraying a story, there are many ways to incorporate narrative principles in the design of the interface, the action, and the visual representation of the story itself. Because of the computer-based medium, some aspects of narrative theory can be rethought, and new principals can be employed in interactive design. The use of traditional narrative devices in the interface, design, and as part of the interaction is a classic example of creative lateral thinking. The cohesion, message and meaning of the interactive experience can be greatly improved when incorporating storytelling methods as part of the design of the interface.

Aspects of the visual grammar can be addressed when using narrative principals in the design of the story. The relationship between the navigation and the content, the look and feel of the transitions between the different screens and locations can be determined, and whether the transitions should be lyrical, scientific or even comic book like (Don 1990). Transitions are a very strong component of visual language, and can be used to create humour, and equally can startle and shock. The transitions between the differing media types should be integrated into the narrative whole so that text, graphics and video are provided with a context within the story. Information should be imparted as part of the exploratory experience of the story, rather than being thrust upon the user. This integration should occur in a narrative sense as well as a design one (Don 1990).

Even the design style of the interface can have its basis in accepted genres, mirroring the narrative content of the story itself. This is evidenced in many science fiction titles, where a high-tech interface enframes an equally technological design style. The genre of the story should also affect how the design is approached. In a similar way that genre affects the visual language of a movie, in terms of lighting, costume and overall look, it should also strongly influence the design of graphics in an interactive narrative. The look of a game should reflect the overall mood of the story.

Another use of narrative in the interface is the integration of names, lists and "how to" instructions within the story itself. The knowledge of how to interact with the interface can be divulged with the narrative, rather than having to be presented out of context and learned separately. By embedding this information within the action, different types of information can be represented within the one narrative framework (Don 1990).

3.7.1 Time

Time adds a fourth dimension to the design of any story, and what becomes relevant is not only its portrayal, but the user's passage through time and through the story as the interactive is "played". Unlike a linear narrative, the time in which a story is accessed *can* alter the story itself, as the computer records the time and date in its central processor, and this information can be accessed by a programmer (if it is scripted) to alter the events of the story. Characters in the story could comment on how long it takes a user to perform a task or remind the user of the time or date. An example of this could be a character greeting the user with, "Good morning Dave" or chastising with "I don't believe it, you took five minutes to do that! Do you want to try that again?". Hence the correlation between the virtual world and the real one can be linked, enhancing realism.

Some writers (and designers) have actively manipulated time to affect the narrative pace of the story. In Tony Sherman's *Dracula Unleashed* the player is given four (game) days in which to solve the crime. The time taken to complete tasks is recorded on a clock. However, what may take a user two minutes to achieve may result in an hour being deducted from the game time. Actions within the story continue, whether the user is there to witness them or not. For example, if the player loses consciousness, they may miss two or three scenes in the story and be deducted eighty minutes of game time (presumably the length of time they were unconscious in the connoted world). This manipulation of time increases the sense of urgency in the game and increases the players pace (Garrand 1997).

Another use of time is used in Dave Riordan's *Thunder in Paradise* where the time spent in one scene can affect the narrative outcome. This is one way to allow the connoted world to reflect how time actually works in real life. If the heroes take too long in attempting to rescue the heroine, the bad guys have more time to prepare their defence. Using time is also used to increase the narrative pace of the story. If the user spends too much time in one scene, the next scene can be altered to speed up the narrative pace (Garrand 1997).

The use of time in regard to how long the user has been accessing the story has been used by many interactive games, and if the user does not successfully achieve a number of tasks within a specified time frame, the game concludes. The more skilled the user, the longer they are able to play. However, the frequency and the time between games can also be calculated and commented upon by the skilled author. If a gamer has not accessed an action narrative for a long time, this information can be used within the story itself to unsettle the user. When setting skill levels, for example, the computer can comment that the user is rusty, and may want to take it easy on the

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first game. Or it can applaud the user for being an addict and promise more difficult interaction this time around. These methods are perhaps best implemented on interactive stories designed to be played on a personal computer or Playstation, rather than an arcade style game. If the author wishes these techniques to be used for a game that is used by many different players, some form of unique user identification should be used.

3.7.2 Interface Agents

Computers are programmed to respond in a certain way to actions undertaken by the user. How they are programmed to respond is a behaviour. When people talk about behavioural predispositions, quite often metaphors connected to living organisms are used, even when describing the behaviour of a machine. People can see computer programs as having personalities, the grammar checker in Word is a pedant, error messages are “wrist-slapping grannies” (Laurel 1990 pg 356). The step from recognising this personalisation of interface behaviours, to employing narrative characterisation is not a great leap in intuition. Interface agents are characters, who act on behalf of the user in the computing environment. They are “autonomous software entities that make choices and execute actions on behalf of the user” (Oren et. al. 1990 pg 381). They are able to dynamically respond to the user’s changing needs, knowledge and preferences. Their strength lies in the metaphorical association with real life objects, in terms of behaviour and communication style. Their potential is endless (Laurel 1990).

However, interface agents have their down side. If the traits that they are programmed to possess, such as being a nagging secretary, are not tailored to the user, the result can be annoying and distracting. Many users face the thought of interacting with an interface agent with dread. The idea of chatting to their computer strikes them as absurd, embarrassing and downright stupid. However, if the interface agents are designed with a specific purpose and metaphor in mind, their use in the mundane tasks can free the user to perform other tasks (Laurel 1990).

People also seem reluctant to interact with representations of people as interface agents, as some feel the bad treatment of their personified computer may somehow translate into irrational behaviour with their fellow man (Laurel 1990). Microsoft’s Office ‘97 has sidestepped this issue by implementing an interface agent whose visual manifestation is user-chosen. A paperclip, for example, does not place any behavioural expectations on the user; it is just a paperclip. Microsoft’s interface agent indicates when the machine is busy, when it is printing, provides hints and gives grammar and spelling assistance. This constant feed back allows the user to interpret what is happening within the machine, and allows time for processing to take place. When active, the Microsoft Office agent analyses every user input, and attempts to respond to user needs. It implements some of the aspects of artificial intelligence, using pattern recognition techniques to anticipate user behaviour.

The use of an interface agent succeeds or fails by its responsiveness to the user's needs. The agent should be able to identify the user's goals within a program and facilitate the outcome. It should be able to create a dynamic model of the user that changes over time, symbiotically with the changes in the person. However, the use of fully blown artificial *personalities* is not needed for most interface agents. Their function is much simpler, and would rely on a stereotypical form of personality, rather than a richly developed synthetic character. No one wants the interface agent's life story, they just want the job done. If the agent is required to work in a multi-user environment, then each individual user should be able to be identified, so that their needs can be met. The agent should have problem solving skills specific to the problem domain and be able to provide multiple solutions to a problem, depending on context (Laurel 1990).

Care should be taken in the use of interface agents within a story structure. If an agent is to be used, a character should be provided who is consistent with the narrative. A distinction must be drawn between an interface agent, and a narrator. Think of a narrator as telling the story, and an interface agent as a fixer, someone who helps along the way. A narrator has already experienced the events in the story and is involved in the process of telling (a narrator always knows what is coming next) whereas an interface agent is an ever-present companion who helps along the journey of discovering the narrative. An interesting merging of the interface and the narrative would be the integration of the agent and the characterisations within the story itself, rather than being permanently perched on the interface. The characterisation of the interface could then become entwined into the story structure. The agent would then be present in two levels of representation, moving from one conceptual space to another, using information gathered about the user in the story itself. This would certainly set up an interesting dialogue!

3.7.3 Characters as Guides

Another use of characterisation in the interface is not semi-intelligent interface agents, but character guides. These are representations of people who, at appropriate times in the story, can suggest courses of action to the user. They differ from interface agents in that they do not differentiate between users, or gather information about them, but merely act as facilitators of action. Guides can alter the user's course through the story, but their actions and comments are predetermined, or scripted. They do not contain the artificial intelligence to dynamically change content, but form part of the storytelling process itself, assuming the role of a character or the narrator. Unlike the interface agent, their representation is not necessarily permanent on the interface, but can appear at various stages throughout the narrative. The path that is navigated throughout the story can differ depending on which character guide is chosen by the user, or indeed whether the guide's suggestions are followed (Oren 1990).

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Character guides form part of the narrative structure, they are characters within the story, fully developed, with a past, present and future. Their view of the virtual world is coloured by their experience, and they are a useful way of presenting differing viewpoints of the same story. Character guides are an excellent way of creating narrative threads and linkages through data and can be a means of creating a story structure through what is usually regarded as non-narrative, such as a database. If the data is thematically linked, an appropriate character guide can be created to guide the user through a particular knowledge domain. An example of this is Grolier's *A CD ROM Sampler of United States History* where character guides were created by the authors to help the user's navigation through an historical database. Each character is user-chosen and provides their own personal viewpoint on the topics accessed. This provision of first-person guide made the access of data a more enriching experience. Many of the users wanted to know more about the guides and wondered if the type of data gathered would differ depending on the character guide used. Narrative linkages and connections between events could be established through the data, and the provision of comments on the ramifications of certain political decisions on normal folk by the guides made the story cohesion firmer. Thus, the character guides not only formed part of the navigation, but also formed part of the content (Oren 1990).

The use of character guides creates a narrative interface, where the story that is told is determined not only by the content, but also by the conditions and context of the *telling* of the story. The story can be told from a particular character's perspective, and the telling can differ depending on the worldview of that character. Narrative interfaces should take into consideration the user's needs and interests and provide a framework that allows the presentation of information and the structure of that presentation to evolve with the telling of the story. Each story therefore evolves depending on the interests of the individual user, and the telling differs with each use. Diversion and elaboration can provide narrative threads that form multiple sub-plots and digression from the main focus of the story. Digression, however, is unlike browsing, because it occurs within the context of the story (Don 1990).

Using a narrative approach to interface design collapses the notion of *interface* and *content*, as characters, guides and narrators perform a dual role of navigation and content. The result is a more heuristic interface that emerges from the material presented, rather than a "control structure interface that is slapped onto the content after it is assembled" (Don 1990 pg 390). Design style, interface and story all merge into one, not so much an Aristotelian completeness of action, but rather a cohesion of form.

3.8 Summary

The task of creating the interactive narrative is much more involved than that of traditional media. It draws on its cinematic roots in the form and style of pre-production but differs significantly in structure. A great deal of time is spent by interactive producers organising and arranging their scripts, flow charts and storyboards before going into production. Time spent early in the production process can save a great deal of frustration and energy over an unwieldy and improperly thought out structure.

The structure and resultant flow chart in no way has to be uniform. The author can utilise a combination of all of the non-linear structures to create their work, indeed, it is also often necessary to control the action through linear sequences for exposition purposes. Nodes of digression and exploration have to be considered and are part of the playful nature of the interactive story.

Correctly organising the conceptual model not only helps to create the design document, but the user guides and on-line help as well. Because the author necessarily becomes overly familiar with the work, it is often useful to workshop the interaction with people not involved with the project. Often, they choose options that have not been allowed for in the structure of the program.

Issues to do with feedback and the narrative use of the interface raise the issue of the interaction between the user and the computer. If the player is using the cursor, input devices, the interface and physical movement to input their side of the interaction, then by necessity the computer should respond in some way. The next chapter starts to move from the writing process to that of the design, dealing with the dialogue between user and computer.

Chapter Four: Dialogue Design

The process of interaction is like a conversation, where the actions of one participant elicit a response from the other. But that response has to take place in an environment of mutual understanding. Both the user and computer have to understand how to interact with each other. In order for there to be human-computer interaction there must first be some sort of discourse, a dialogue between computer and user, which formalises a common framework within which a story may occur. If narrative is a telling, then dialogue is a process of continuous feedback, and hence a fundamental difference in approach is required when discussing the interactive narrative.

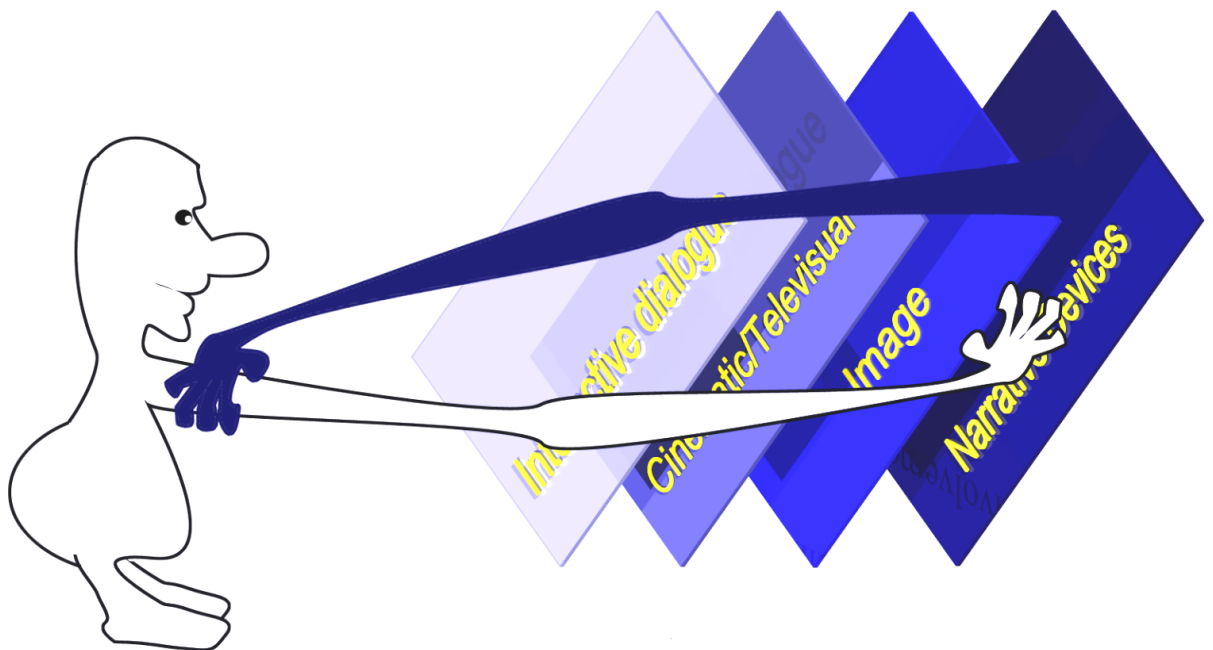


Figure 21. The user affecting the story outcome (and visa versa).

The fact that the audience has been transformed from a receiver of the story into an active participant in the storytelling process means that the level of involvement in the story itself has dramatically increased. The process of dialogue between human and machine suddenly places demands on the user, decisions must be made, problems solved, action taken. In order for the story to unfold, the user must do something. Without some sort of input nothing will happen. In response to the input the computer will also interact with the user, giving feedback as to whether the required actions have been completed, guiding and alerting them to inappropriate responses. It is this process of input and response, of action and reaction, that sets up a discourse between human and machine. Dialogue allows the opportunity for the user to react and negotiate a process of feedback and confirmation.

How the dialogue is constructed, how the user relates to the interactive “there”, lies in the skill and the talents of the designer and programmer. Working from the design document, they create the human computer dialogue. The meanings and language of the interactive discourse, as well as the visual grammar are created by a system of action and reaction. The changes in the “there” create a physical response in the “here” and the user is constantly modifying his or her behaviour. The dialogue is real, even if the evoked world is not.

Dialogue or conversation has to be framed in terms of common goals. It is more than “taking turns”, it is based on a system of shared beliefs, mutual knowledge and similar assumptions. Each participant has to be able to update their position and learn from the other, creating a common ground in which the two can communicate. That common ground, in terms of human-computer interaction, resides on the monitor screen, and it is through the lexical/visual computer interface that such a dialogue occurs (Laurel 1993).

Herbert A. Simon describes an interface as being where an artefact “can be thought of as a meeting point ... between an “inner” environment, the substance and organization of the artefact itself, and an “outer” environment, the surroundings in which it operates” (Simon 1981 pg 9). If an object is appropriate to the inner as well as the outer environments, then it serves its intended purpose (Simon 1981). This is particularly true of the human-computer interface. The interface and the computer screen itself form a conceptual space – the place of discourse. Both the computer and the human act as agents within that space, acting and reacting to the actions of the other. When the common ground of understanding breaks down, the result is misunderstanding, mistakes, and a general lack of comprehension on both sides (Laurel 1993).

Dialogue cannot be a one-sided process. The user has to feel that they are participating in the ongoing action of the representation. Being presented with a linear sequence, or a set of linear sequences, is not interaction. There must be some sort of response by the computer to the user’s input. The graphical representation of the objects and environments through the interface provides the context for action. Sensory engagement coupled with a rapid visual response to the user’s input results in a highly interactive *connoted world*. It allows the user to act within the visual representation. And although the users indeed sitting on one side of a computer screen, the psychological effect is one of becoming part of that world (Laurel 1993).

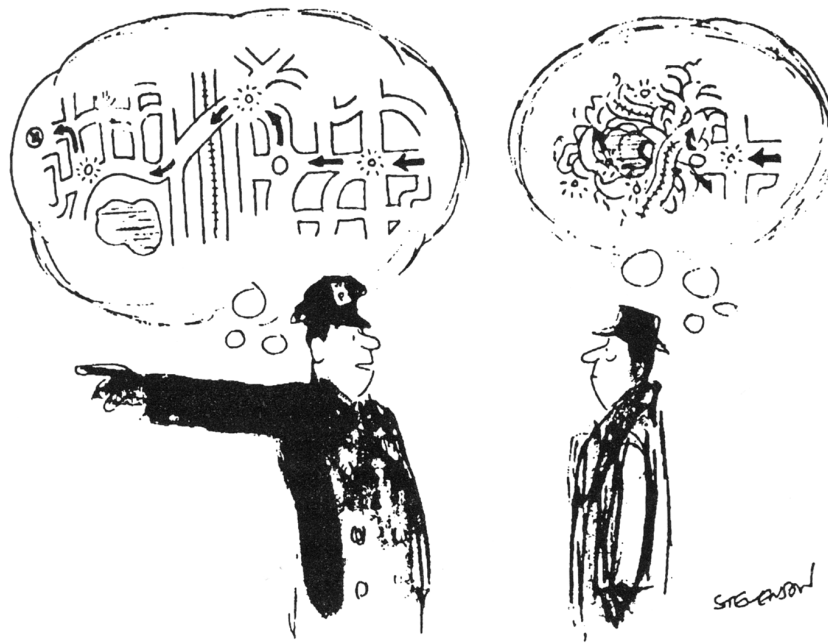
Dialogues can take different forms. One type of dialogue is modal, in which a series of messages are transmitted and received, usually using modal dialogue boxes. In a modal dialogue, there is no opportunity by the user to interrupt the message once it has commenced. It’s a tit-for-tat type of interaction, where the user does something, then the computer responds. Basically hierarchical, some actions can only be undertaken upon the completion of other actions. While easy to implement by the computer designer and programming team, it leads to a very stilted dialogue, which is unnatural for the user. However, modal dialogue is very handy when the

system requires the user to decide in order to avoid an error, or to alert the user to a dangerous or possibly irreversible situation. Modal dialogue boxes usually freeze all other functions on the computer screen so that the user has to concentrate on the dialogue. Another type of discourse is modeless, where the dialogue is free-form. Modeless dialogue presents information to the user but does not restrict the user's actions. The user can ignore the computer, resize the dialogue box, moves its location and access all areas of the program. This is a more natural form of dialogue but is enormously difficult to program (Preece et. al 1994).

The types of dialogue more commonly used by interactive designers are hybrids of the two. The navigation through a virtual space is modeless, but the activity that *must* be performed is mode locked. Mode locked sequences are one way that critical narrative devices, such as plot, are created within the interactive story. A combination of modeless navigation and locked activity gives the impression of an ecumenical evoked world but allows the authors to direct the action.

4.1 Mental Models and Genre

Every game, application and CD-ROM has its own unique interface. If they wish to use the game, application or CD-ROM the user has to learn how to use each interface. The design of the interface is not always intuitive. Interfaces can be difficult things to manage and to understand. With all of the commands, functions and tools that must be remembered, cognitive overload is often unavoidable. In interactive narrative the goal is to entertain or inform, or a mixture of both. If the interface creates a barrier to interaction, instead of engagement, then the story (or program) will become too frustrating for the user to complete. The dialogue between the computer and the user would not commence, or would break down irrevocably.



Drawing by Stevenson; © 1976 The New Yorker Magazine

Figure 22 Mental Models and mutual understanding.

When considering the design of the interface, the user has to be taken into consideration: how they view the world, their capabilities, the tasks they have to perform. As with narrative theory, the world view of the user must be appreciated and built upon to enhance interaction. When interacting with the world, with others, and with technology, “people form internal, mental models of themselves and of the things with which they are interacting. These models provide predictive and explanatory power for understanding the interaction” (Norman 1983 pg 7). Donald Norman (1983) proposed four different concepts to be considered when examining mental models. The *target system*, its *conceptual model*, the user’s *mental model* and the *scientist’s conceptualisation* of that mental model. The game, CD ROM or computing program that the user is trying to interact with is the *target system*.² The *conceptual model* is the tool for understanding and teaching the target system. It may be manifested in the help system of a program, or may be included in the design documentation, or user’s manual. The conceptual model created by writers, designers, programmers, teachers and scientists provides an accurate, consistent and complete representation of the target system. Conceptual models should provide a model that is consistent with the user’s *mental model* of the system. Unfortunately, often they do not. The user’s *mental model* is the idea the user has in his or her head, which guides the use of the interface. Incorporated in the mental model is how the user is able to interact with the computer, the

² These concepts apply to any technological system, but I will constrain the parameters to those of human-computer interaction.

interface and how experienced they are as a user of that particular program. The *scientist's conceptualisation* is the scientist or psychologist's interpretation of the *mental model*. It is in effect a model of a model, and as such is a tool for the scientist to predict the user's predictions (Norman 1983).

The mental model that a user brings to an unfamiliar system is similar to genre. Users approach a task with a preconceived set of expectations and have a notion about what tools they will be able to use to perform the task. Because of their previous experiences with similar programs, they are able to hypothesise about how the system will work. Then, during the interaction with the target system, the user will update and modify their mental model, in order to achieve an understanding of the new program. Feedback from the program itself is critical to this process of learning and updating the mental model. Similarly, each addition of a new but deviant story to a genre classification updates the expectations that the audience have when approaching that genre. So genre is a mental model of a story type. A mental model is an expectation of how the user thinks a system will perform.

Sophisticated performance depends on the participant being able to draw upon a broad gamut of mental models when interacting. The user holds any number of mental models in memory. When a program is accessed, assuming that the model is correct, they are able to draw inferences and predictions based on their mental model of the program. Even if they have never accessed the program before, they are able to draw on mental models of similar systems to aid their assimilation of the program (Manktelow and Jones 1987).

A coherent and plausible mental model will help interpretation and the user's ability to remember information (Manktelow and Jones 1987). However, mental models are not static structures, and are mostly incomplete. People forget the details of the system they are using, especially if the program has not been used for a while. An experienced user will have a well-formed model, unlike the novice (Sutcliffe 1988). Also, a mental model for one particular program will become confused with that of other programs of a similar type. People have problems creating their mental model. Also, as mental models often do not encompass the entire system, users will do extra physical actions to achieve a result rather than planning mentally for the task ahead. The trade-off is physical action against mental complexity (Norman 1983).

The user's mental model of the system is more than simply the physical detail of how it works. There are differing levels of abstraction at work, the image of the system being the "physical form, physical function, functional structure, abstract function and functional meaning" (Rutherford & Wilson 1991 pg 41). When a system's functionality is examined, its operation can be abstracted at various levels. Each level gives some account of the operation, and so at each level there is a mental model at work (Rutherford & Wilson 1991). Because mental models are unstable structures, at each level there is scope for error.

Important in the design of an interface is that the conceptual model created by the designer maps onto that which is created by the user. There should be a direct and simple relationship between the conceptual model and the mental model, a “correspondence between the parameters and states of one’s model and the things one is attempting to describe” (Norman 1983 pg 13). When a system is designed, it should be based on the conceptual model. It should be consistent, cohesive and understandable. Therefore, the design and teaching of that system must be learnable, functional and useable. The usefulness of a mental model lies in its predictive powers. A user should be able to infer what will happen next without necessarily having to run the model (Norman 1983).

The displays of the program must be consistent with the mental model of the system, in that the displays must allow certain mental models to be created. Interface design influences the construction of the mental model, so the designers must ensure that the users are able to construct an accurate user model (Rutherford & Wilson 1991). If the design of the interface is based on the user’s previous experience, then an accurate mental model is quickly established in the user’s mind. Designers must take into account the mental models created by programs of a similar type and use existing design methodology as a way for users to quickly grasp the function of their system. If no such model exists, then a clear and consistent structure should be created to help the user to assimilate the interface (Sutcliffe 1988). One of the best ways of designing an interface is with the continual testing and evaluation by users. If potential users of a system are involved in the design process itself, rather than the design being based on the intuition of the designer, pitfalls in the design can be corrected as the project progresses.

4.2 Thinking and context

As the structure of many existing interactive narratives require the solving of problems in order to advance through the story, it is useful to examine theories of how people think through problems. Thinking and problem solving are mental activities that use input from the senses and from long-term memory to process data. When people experience something that is unexpected, that prohibits progression, they resolve the conflict by problem solving. By using prior knowledge, the person uses existing ideas to form some sort of solution to the new problem. There may be a discrepancy between the desired state and the existing state of affairs, with no obvious method of changing the situation (Sutcliffe 1988). How a person goes about solving a problem may be dependent on the context of the problem, rather than by the use of logic.

Problems that can be derived from logic are generally in the form of “All A are B; all B are C; hence, all A are C” (Manktelow and Jones 1987 pg 85). This argument holds true no matter what values are substituted for the represented letters. However, not all problems are so straight forward. Conditional problems are presented in ordinary discourse along the lines of “If A had happened then B might have

happened too. There is a good chance that A did happen” (Manktelow and Jones 1987 pg 85). Such arguments are difficult to express formally, and many methods may be used to obtain the correct answer, some which use no logic at all, like guessing or recalling the answer from memory. So logic is not necessary for problem solving, and the “nature of thought is defined in people’s memory for particular domains of knowledge” (Manktelow and Jones 1987 pg 86). An example of this is the multiplication tables learnt in school. Useful for quick recollection of answers, but not very useful for understanding of the formal methods of multiplication or of any answer requiring the multiplication of numbers above 12 (Manktelow and Jones 1987)

The role of context in reasoning parallels the way meaning is derived from literary metaphor. Meaning is created in part by the metaphor’s context. Situated within a sentence, its meaning is constructed in part by the surrounding text. Context in reasoning works similarly. The context of a problem determines in part the mental solution. The classic example of this proposition is this: Here are four cards.



Rule: If there is a vowel on one side then there is an even number on the other side.

Which cards need to be turned over to prove the rule?

Consider another problem. A cashier in a department store is given the following rule:

If a purchase exceeds \$20 then the receipt must be signed on the back by the supervisor. Four receipts are presented one for \$30, one for \$10 one signed on the back and another unsigned. Which receipts need to be inspected to prove the rule?

In the problem with the letters and number, most people opt for the answer of E and 4. With the cashier problem, most will choose the unsigned receipt and the \$30 receipt. Only the second answer is logically correct. The logical answer to the first question is E and 7, which is not the solution that most people choose. The rule does not state that an even number *must* have a vowel on the other side, so by turning over 7, to see if there *isn't* vowel on the other side is the correct answer. Only 9% of people tested on this quiz get the first answer correct. The questions are logically identical, only the context differs. The more realistic the contents of the puzzle, the more likely the subjects are to deduce the correct solution. If the task required maps closely onto one expected to be performed in real life, such as the verification of the receipts, then the level of logically correct answers is high. So the selection task has to be realistic for the users (Manktelow and Jones 1987).

What is being demonstrated by this example is that context determines problem solving to the extent that people return non-logical answers. This goes against theories about formal operational thinking, which propose that logic is context independent. This discrepancy raises questions for interface design and human performance. The designer must take into account that people do not necessarily reason in a logical manner, but solve problems based on the context of the problem. So the mental model of the problem, how the user perceives the context, rather than its logic has to be taken into account on when the user is required to solve problems. The designer has to be careful not to design generic solutions and then transpose them into different contexts, as the user's response will not be consistent (Manktelow and Jones 1987). The problem can no more be removed from its context than can literary metaphor from its sentence.

Problems created to provide the user with a series of goals that they have to achieve in the story should be created with a number of issues in mind. If the user fails to solve one problem does that mean that progression through the story completely ceases? If so many first-time users will feel utter frustration and the cessation of interaction if they fail to complete certain puzzles. Being presented with multiple problems which can be solved in any order is preferable to a linear problem-solving format. In that way the user can make some advances through the story without coming to a complete standstill. The active participation in the story is one of the involving characteristics of the interactive narrative, but impossible puzzles or non-intuitive leaps should not be imposed on the user.

4.2.1 Memory and the Interface

A major problem with using any computing system is memory. Not the amount of RAM or hard-disk storage that is present on a particular computing system, but human memory. When a user is required to use a system, he or she has to draw on their memory in order to locate things such as menus or sub-menus, to understand what has to be done in order to interact with the story and how the interface functions. If the interface forms part of a narrative, the user also has to remember what has happened and where they're at in the story. All of these different aspects can lead to cognitive overload, where the user becomes so burdened with all the different aspects of the program and the interface, that the task and the interaction seem impossible. By examining the *theories* about how memory appears to work, some of the cognitive burden placed on the user can be avoided.

Although no-one knows exactly how memory works, theorists generally accept that there are three main aspects to memory. These are *sensory buffers*, *short-term memory* and *long-term memory*. Sensory buffers appear to work as buffers for stimuli received from the senses (Dix et al. 1993). Short term memory, or temporary memory is that which has to be retained for less than a minute. Long-term memory is that which has to be remembered over longer intervals, making long lasting demands on memory (Hitch 1987).

4.2.2 Sensory Buffers

At any one time a number of stimuli is received through the human senses. These can be input to the brain through touch, (haptic memory), sight (iconic memory), and hearing (echoic memory). If all of the inputs to the brain were fully processed, the result would be sensory overload. To avoid the full processing of sensory inputs, there appears to be temporary buffers for each of the senses, which are constantly overwritten by new input (Dix et. al. 1993). This overwriting takes place every 100 milliseconds. An example of this overwriting is when you close your eyes. The visual image disappears almost immediately (Sutcliffe 1988). The delay in overwriting allows such phenomena as persistence of vision, where an image is retained in memory before it is updated. This persistence of vision allows the phosphors on computer screens to be updated without any apparent flicker. This iconic memory also allows the perception of animation and cinema, as the rapid replacement of one static image after another allows for the perception of motion.

In the echoic (aural) memory, the delay is slightly longer, and is one of the effects that allows for the comprehension of sound, as a millisecond of sound is not enough to identify language. For sound, it is thought that the contents of echoic memory before update approaches one second (Sutcliffe 1988).

The sensory buffers seem to pass information into short term memory on the basis of attention, so that information is filtered to that which is important at any given time. Attention concentrates the mind on one input out of a number of sensory inputs. This selective focussing of the mind occurs because of the limited processing power of the mental process. The selection of stimuli to be attended to depends on the person's arousal, interest or need. Information received by the sensory buffers is quickly passed to the short term memory or is overwritten and lost (Dix et. al. 1993).

4.2.3 Short-Term Memory

Human short-term memory is the equivalent of RAM on a computer, it is the working memory of the central processor (Sutcliffe 1988). It differs from a computer in that it appears to lose its memory very quickly, and effectively works as a temporary recall of information. A good example of how short-term memory works is reading. The reader has to retain the beginning of a sentence in short-term memory in order to understand the meaning of the entire sentence (Dix et. al 1993).

Short-term memory, being only a temporary scratch pad, can be accessed quickly, in the order of 70 ms, but information is only held there for approximately 200ms. Short-term memory only has limited capacity. When a person is required to remember something quickly, the average person can only remember 7 +/- 2 digits (Dix et. al 1993).

Look at this sequence,

45679429489

now try to write it down. Normal short-term memory can remember between five to nine digits in a sequence. However, if the digits are broken up into groups or *chunks* remembering becomes easier. Look at these numbers,

435 242 3489

Because the numbers are grouped together, they are easier to remember. So human memory can remember between 7 +/- 2 *chunks* of information (Dix et. al. 1993 and Simon, 1969). This is useful to remember when placing demands on the user. Short-term memory is limited, so if something is required to be remembered by the user, the time between the remembering and the output either has to be very quick, or there should be some way of reminding the user of the value. Being able to save the information or using alert screens is one way of designing the interface so that the user's short-term memory does not become overloaded.

It has also been established that familiar chunks are easier to remember than unfamiliar ones. So phrases such as "USA" or "BBC" require little in the way of cognitive load, as the users have rehearsed the phrases beforehand. They are familiar. Longer words are remembered less well than short words. There also seems to be a correlation between the time people take to articulate the words, and how many things a person can recall, "people appear to be able to recall, in the correct serial order, about as many words as they can articulate in 1 to 1.5 seconds" (Hitch 1987 pg 125). A theory was proposed by Baddeley and Hitch (1974) that a "limited capacity, time-based *articulatory loop* subsystem of working memory was responsible for the word length effect. This subsystem was also thought to be the basis for the phonetic similarity effect, the finding that words or letters which sound alike are typically much more poorly recalled" (Hitch 1987 pg 125). This articulatory loop subsystem is related solely to the use of language in short-term memory.

The longer it takes between remembering the event or encounter and recall of short-term memory, the more quickly information is forgotten. There is rapid forgetting over about 20 seconds, after which retention is at a very poor, but stable level. If the user is required to do a task in between remembering and recall, the rate of forgetting increases. If the user has been required to remember something similar recently, there is a likelihood that they will make mistakes on recall. So, the rate at which things are forgotten is not fixed, it varies depending on situation. If a person is allowed to rehearse sub-vocally after they are required to remember something, the rate of forgetting is alleviated (Hitch 1987). So there appears to be a relationship between memory and practise.

Another subsystem theory discussed by Hitch (1987) is that dealing with visual information. When looking at random checker-board patterns, the information retained by the user is less likely to become contaminated by verbal labelling or recoding of the patterns. The information can be retained for a number of seconds without loss. This process also seems to involve a rehearsal process, known as visualisation. The upper limit on the amount of checker-board information that can be remembered is about 30 cells. If a task is required in between the time of event and recall, again the recall is disrupted, but then only if the interfering task places high demands on the user. Abstract patterns are more difficult to remember than non-abstract visual stimuli, but overall pictures are more easily remembered than language (Hitch 1987).

This research would appear to reinforce the preference for the use of visual icons over written words in interface design, as non-abstract visual imagery is remembered more readily than abstract or written language. Easily nameable images seem to activate both the verbal articulatory loop and visuo-spatial sub-systems of short-term memory, and with two subsystems reinforcing one another, the familiar image is more easily remembered (Hitch 1987). So, if the narrative requires people to use their short term memory, pictures of recognisable objects are easier to remember than language, and short words are retained for a longer duration than lengthier words. However, the designer should not rely heavily on people's memory, and some sort method of storing and retrieving information should be provided if memorisation is required.

4.2.4 Short-Term Memory Demands

The demands placed on the short-term memory in human-computer interaction may be difficult to appreciate. The user has to hold temporary information in the mind for a number of tasks. Some examples of the types of information requiring temporary memory would be:

- *Temporary Labels and Parameters:* The user has to remember any temporary labels or parameters that are needed for his or her current activities. An example of this is the name of a new command that has just been looked up in the user manual, or the current version of a file (Hitch 1987).
- *User's Current Sub-goal:* If the current task involves a hierarchy of goals, it is important for the user to remember their place in the hierarchy in order to work efficiently. This involves remembering where their particular sub-goal is in the hierarchy, and indeed which sub-goal they are currently executing. For less advanced users, remembering the goal structure itself will be a temporary memory demand. If the computing program provides visible reminders to the user as to where they are in a current task, this cognitive load is lessened. The lack of such reminders causes errors. An example of this is when the user is undergoing a complex series

of file-handling operations, such as saving or renaming a file. It is very easy with such routine tasks to delete instead of saving a file (Hitch 1987).

- *The User's current response:* The user has to keep track of their current position in a sequence of responses. In the case of typing text, this has to be monitored at the keystroke, word, phrase and sentence level. The failure to keep track of the current response leads to errors of omission or repetition (Hitch 1987).
- *The Computer's current response:* The user also has to keep track of what the computer is doing. An example of this is when the computer is busy and will only accept a limited number of inputs at that particular time. Another instance of this is when the user has to switch between different modes (Hitch 1987).

It is important to consider short-term memory demands when considering the design of the dialogue between user and computer. If too many operations are required to be remembered by the user, or if interruptions occur between the time of event and recall, the user will have a great deal of trouble interacting with the system. Familiar icons are more easily remembered than text. Having to remember similar types of information will create errors, and people can only remember only seven *chunks* of information, give or take two chunks. Whatever help that can be provided to lessen the short-term cognitive load for the user will make the interaction easier, and much less frustrating.

4.2.5 Long-Term Memory

The main difference between long-term and short-term memory is that long-term memory has unlimited capacity. It contains all of the knowledge that a person has accumulated over a life time, everything he or she "knows". It also has slow access time, in comparison to short-term memory, approximately one tenth of a second. Forgetting also occurs more slowly in long-term memory, if at all (Dix et. al 1993).

Long-term memory is used for long-term storage of information, which is placed into long-term memory after a few seconds in short term memory. Unlike short term memory, there is little decay, something that is recalled after several minutes is the same as that recalled after several hours or even days (Dix et. al 1993).

There appears to be two forms of long-term memory, *episodic* and *semantic* memory. Episodic memory is autobiographical in that people remember certain events in a situation, and may identify a picture, word or sentence within that context. Semantic memory is commonly known

as “knowledge” and contains information about the meanings of words, pictures and their interrelation. At some time, information stored in semantic memory would have been stored in episodic memory, but how this process occurs has not been studied. The theory that there are two types of memory does not necessarily mean that there is more than one type of memory system involved when a person interacts with the world, merely that this area is yet to be confidently researched and modelled (Gardiner 1987).

Episodic memory requires less effort than semantic memory, as it is easier to remember relationships within a context, usually within a spatial proximity with some sort of temporal link. Episodic memory is a powerful means of recall especially when visual cues, such as the desktop icons on an Apple MacIntosh computer, are used. Semantic memory requires an understanding of what is being stored, rather than its context (Sutcliffe 1988).

Episodic Memory

Theories of episodic memory propose that one of the determining factors ruling the probability of remembering something has to do with the amount of processing that occurs on a given stimulus at the time it enters memory. Stimulus can be processed at a shallow level, or at progressively deeper levels. For example, simply remembering the spelling of a word is a low-level process, whereas understanding the meaning of a word is a deeper level process, which requires more processing. Variations on this levels-of-processing theory add the notion that the more elaborate, or greater amount of processing done to a particular stimulus determines the depth of the processing. Hence for any level of processing, there may be more than one level of elaboration (Gardiner 1987).

This information has implications in interface design in that if a person is required to remember something, they need to be forced into using deep levels of processing. The problem is that most people minimise their cognitive load. So, the dialogue design needs to be complex enough to enable deep episodic retention, but not to impose such an additional load that the user tries to avoid the task. Avoiding long and complex command sequences, the direct manipulation of objects on the screen, and form-filling, all help to lighten the cognitive load (Gardiner 1987).

Once something has been placed in episodic memory, it is only useful if it can be retrieved. Bad memory is not necessarily the forgetting of something, rather the path to it has become untraceable. Because episodic memory is memory by association with context, things are more readily remembered if cues are given to aid the recall process. Remembering by association is aided by prompting or memory cues. An example of this is a long list of vegetables, fruit and animals. If subjects are given a list that is organised into categories, they are able to remember more items than those who are given a long undivided list. (Gardiner 1987). Dividing lists into

“chunks” enables them to be passed more readily from short term memory to long term memory (Simon 1969).

The context in which the item is stored creates an association with the item itself. If someone needs to buy some JAM on the way home, then being caught in a traffic JAM will not jog their memory. It is likely to be jogged when they see a shop, or strawberries, or something associated with the context in which the word is stored (Gardiner 1987).

When designing a user interface, it would be useful to remember how easy it is for people to remember things in lists or categories. The naming of menus, the breaking up of information into lists of similar sorts of information and even defining which items should be on which screens, is useful. From this the user can create relationships between items, and hence be able to remember them more readily (Gardiner 1987).

But remembering things by category does not increase the number of items per category remembered, merely the categories themselves. The memory prompts only have a limited capacity and become overloaded as more items are added to each category. When the memory is overloaded, it becomes less effective. When episodic memory becomes overloaded, it is only the *distinctive* elements that are able to be remembered. Similar items that are too close in family likeness become indistinguishable. So in terms of interface design, creating categories or groups of information is good, as this enables the user to chunk them together, but making them too similar leads to confusion, and forgetting (Gardiner 1987).

Semantic Memory

Theories on semantic memory deal with how knowledge is organised. It appears that when recalling something from semantic memory, “people first of all try to check whether the set of features for one concept roughly matches that for another concept” (Gardiner 1987 pg. 153). If the match fits, it will lead to further processing to see if it falls into a criterion. If it does not, the person knows that the concept can be discarded, and the relationship is processed no further. An example of this is “a squirrel is a fish.” It is quick and easy to answer no to such a proposal, as a squirrel does not fall into the fish category (Gardiner 1987).

It also seems that the categories themselves form a stereotype against which the features are checked. Some categories fall outside of the stereotype, and hence take slightly longer to process. An example of this is “an emu is a bird”. Most birds are small, and fly, an emu does neither, but is a bird nonetheless. It takes slightly longer to answer yes to this statement than to that of “a seagull is a bird”. Examples that are typical of the category are also easier to learn than those that are not, and people are able to generate more information about the typical category member than

for those that are not (Gardiner 1987). Knowledge therefore appears to be abstracted or averaged. A category contains information that is typical of a concept, not a direct representation or record of experience (Manktelow and Jones 1987).

In terms of user-interface design semantic memory theory has implications for the organisation of data structures within the program. Hierarchical structures work well within computing systems but are extremely difficult for the human mind to grasp. They assume too much knowledge from the user and are not easily updated. If a system requires the precise identification of an item for a search engine, it will be difficult for the user to retrieve information. A more human friendly system draws from what the user knows about the item and allows multiple passes in order to retrieve the item (Gardiner 1987).

The categorisation of items in terms of stereotypes is also important. Using a good example of a category is more useful than an atypical example, as it is more easily remembered. Clumping things together in categories also has a spatial aspect, like sorting things into a pile on a desk top. A person usually knows if an item is part of a pile, and if not, what region on the desk it can be found. This is useful to remember when designing an interface, as a user should be able to guess, by the category, where something is (Gardiner 1987).

4.2.6 Long-Term Memory Demands

The demands on long-term memory in human-computer interaction are reasonably familiar and include information storage for issues such as:

- *The state of the machine the last time it was used:* It's important for the user to remember the names of files, and the contents of files the last time the machine was used. It is also important to remember any hardware or software modifications made to the system previously (Hitch 1987).
- *Files:* The user has to remember the system files and programs in order to be able to use special features on them. It is also important to keep track of the contents of files created over successive sessions (Hitch 1987).
- *Procedures:* The user also has to remember a set of basic procedures, such as turning the machine on, logging in and starting devices (Hitch 1987).

Rules: The user has to know the syntax for system rules, such as loading, copying and deleting files (Hitch 1987). This is usually done using the desktop interface in Macintosh, PC or SGI machines. It is useful to know the textual syntax in DOS and Unix if such desktop systems are unavailable.

If a series of prompts or memory cues are provided by the system, remembering the above procedures becomes less of a long-term memory task. Forcing the user to focus on important tasks, without unduly increasing the cognitive load, leads to deeper levels of memory storage. If categories of information are clumped together, the user is able to remember associated tasks, can more intuitively move around the interface.

4.3 Interface Design Guidelines

The computer should be seen as a medium, in the same way that print, TV and cinema are considered mediums. In the case of application programs, such as a word processor, the medium represents a tool. In the case of interactive narrative, the medium represents a form of entertainment. What people are *doing* is interacting with the computer, and what the various outcomes may be of their interaction are secondary (Laurel 1993). Because interfaces span such a broad range of applications, their design must be carefully thought through. The interface is the gateway to engagement. A bad interface means bad dialogue, and a disrupted and difficult interaction.

Before a designer sets out to construct an interface, before the consideration of metaphor, before he or she begins to construct a conceptual model, the emphasis must firstly be on what the user is trying to *do* (Laurel 1993). "One heuristic in developing this kind of sensitivity is to look at the whole task - not just the thing you've been asked to design, but the whole task your potential user wants to accomplish" (Rheingold 1990 pg 7). So, the screen design should reflect the purpose of the story. If the narrative is to inform, the design will necessarily be different than a work of fiction.

Questions about the environment in which the program is to be installed should also be asked. Is the potential audience in the home, office, classroom or factory floor? "When we put a new machine into an office, the entire sociological structure of the office will change. And oftentimes the effect upon the social structure will have more impact than the particulars of the hardware and the interface design" (Norman, 1987 pg 327). Social interaction can be as important as the program interaction. The designer should consider whether networking or multi-user systems are intended uses for the program.

Design concerns, such as making a beautiful button or designing a better scrollbar, are very important, but should be secondary to improving the way people can use and interact with the computer. (Rheingold 1990). For example, many gamers prefer low resolution graphics if the games engine is excellent, and trade off functionality, speed and ease of use over beauty.

Thus, it is important for the designer to know the user population. This can be difficult when the narrative is to be marketed to broad audience. By anticipating user requirements, such as providing short-cuts for more advanced users, and allowing certain actions to be performed in more than one way, the designer can broaden the program's appeal and flexibility. Knowing the user also involves knowledge of human memory. As mentioned previously, it is important for the designer to reduce the cognitive load on the user. Lessening the requirement to remember things, and dividing information into chunks, all help reduce cognitive load. Human error should also be anticipated. If the program is designed to anticipate error and force actions

that prevent errors from happening, such as providing clear and concise error messages, then interaction is improved (Preece et al. 1994).

Sensitivity to good design is also crucial. This involves appreciating and understanding a well-designed interface and being able to implement similar methods in other interfaces. The design ideas should be tested with users at all stages of development, through the rapid implementation of prototypes. Psychological testing should also be done during the development process, rather than upon completion. Designers should not just think about what's needed, they should integrate the testing with the redesign process. By observing how the potential users interact with their interface, noting the common mistakes that are made, the key elements of the design will emerge from the task analysis. The problem with designers is that they know too much about their system, and hence make assumptions as to the actions of the user (Rheingold 1990). Interfaces should be consistent, transparent and easy to learn. These characteristics are often the result of this structured approach to interface design (Brazier and van der Veer 1991).

4.3.4 Screen Metaphors

As discussed in the previous section on literary metaphor, the use of metaphor helps form a person's view on the world. Metaphor also allows one concept to be framed in terms of another. A metaphor sets off a chain of associations, imagery and terminology that allows, constrains and moulds the way that concepts are constructed and represented. Metaphors function as natural mental models, allowing the familiar to be appended onto more abstract and difficult concepts (Erickson 1990). This allows interface designers to firmly grasp and use metaphors as an aid to the user's navigation and use of the interface. By using familiar concepts and by effectively hiding the inner workings of the computer, metaphor helps guide users through unfamiliar systems.

Metaphors are a way for the interface designer to help create the mental model of the system. Apple Macintosh use a desktop metaphor to help the user organise their "files", allowing data to be placed in "folders" and arranged on a "desktop". But "what is really happening is that a pointer to the file is being moved – of course, *pointer* is a metaphor too..." (Erickson 1990 pg 66). However, metaphor can just as easily give a user an inaccurate view of how a system works if a metaphor is inconsistent with system usage. When, for example, does placing an icon of a floppy disk in the trash mean that it is ejected from the machine? If a metaphor leads a person to think that a system works in a particular way, and it does not, frustration and confusion will arise. In effect information is being grouped into a category where it does not fit. This not only disrupts a person's logic, it also makes semantic memory recall difficult (Laurel 1993).

Metaphor can either help or hinder a user's interaction with the system. In the case of narrative, badly implemented metaphor can disrupt the flow of the story, halting forward movement through the plot. An

example of this is the CD ROM game "THE CLUE", (Karam Nada 1993/94) which requires the user to read a 92-page booklet in order to understand the various keystrokes and commands of the game. The screen metaphor itself is relatively simple, being a use/talk/get format. But the non-intuitive implementation means that advancing beyond the first screen is almost impossible. It is important to get whichever metaphor is being used *right*. User interface metaphors should not duplicate the inner workings of the system, but should be a representation of how the *program* works. An accurate rendition of the internal function of a computing system can be almost impossible for the user to comprehend. What is important is the construction of the mental model of the system, the cognitive abstraction. Thus, before the designer decides what metaphors to use, they must first establish what it is the user has to *do* with the system (Laurel 1993).

Working with Metaphors

The first step in coming up with an interface metaphor is to define the user's objectives, and the means by which they will be accomplished. The second is to examine the sorts of problems the user is likely to encounter when interacting with the story. It is important for the designer to observe people using similar programs, and identify problem areas, so that existing errors can be averted (Mountford 1990). The designer should understand what aspect of the functionality is new, and what appears to be familiar, but in actuality is quite different. If the user is expected to interact with the story in a way that mimics something he or she is expected to do in real life, then an appropriate metaphor should spring to mind (Erickson 1990).

Once the functionality has been defined, it is useful for the designer to have a hard look at the specifications. If presented in a narrative form, specifications usually already contain metaphors, as metaphor is useful when defining abstract concepts. These metaphors may not in the end be useful for the design but knowing what metaphors have been used in the design specification helps to identify the limitations that have already been imposed by the use of metaphor. Existing metaphors present in the design documentation may limit the use of metaphor by the designer (Erickson 1990).

If a metaphor for an interface design is too specific, it can limit the mental model of the functionality of the program, so the broader the metaphor, the less constrained the function appears to be to the user. Novelty is also useful, especially when the user will be doing things for which no existing interface metaphor exists. A non-narrative example of a unique interface is that of *Kai's Power Goo*, where what the program does (goo-ey image manipulation) dictates the interface metaphor. Even the undo command is labelled 'ungoo'. Juxtaposing or recombining ideas and objects that are not usually associated is one way of creating a new approach, allowing unexpected insights into how to solve a problem. Lateral thinking exercises can also help to broaden interface ideas (Mountford 1990).

Once a metaphor has been decided upon, it is useful to evaluate whether it fits the narrative. Interface metaphors should be able to evoke some sort of structure, so that the way the metaphor relates to the real

world is similar to the way the program works. It should be relevant to the program, in that it does not raise false expectations or misguide the user. The metaphor should be easy to represent. If it does not have some sort of visual, auditory or lexical quality, it is difficult to implement. It must also be a concept that is recognisable to the audience. If the potential users are unable to grasp the meaning behind the metaphor, then it lacks functionality. As metaphors may also be extended, it is useful to examine other uses for the chosen metaphor, as they may also be used (Erickson 1990).

The designer should use whatever metaphor they choose to its fullest extent. Often metaphors are only half implemented. An example of this is Hypercard, which at first glance uses the book metaphor, but blatantly ignores useful extensions such as indexes, page numbers, contents pages and the simplest metaphor of all, the page turn. Missing the small details in the implementation of a metaphor can lead to misunderstanding of the system (Erickson 1990).

The Problem with Metaphor

Using interface metaphors for the interactive narrative is essentially a misnomer. Rather than positing one thing *as* another, a screen metaphor is a representation of one thing being *like* another, and as such is a refined form of metaphor, the simile. The problem is that the user has to discover what the metaphor actually *does*. People don't necessarily know how the metaphor differs from the object's function in real life. There are three levels of functionality that have to be understood; the metaphor itself, what it appears to represent, and what it actually does inside the computer. The theory holds that by understanding the metaphor, people will intuitively understand its function. This is not always the case, as the interface simile can often represent the wrong thing, or can create the formation of complex mental models that do not necessarily simplify the process of interaction. The trash can metaphor on the Apple Macintosh is an example of this. In order to comprehend what the trash can is actually doing, it has to be remembered that it performs two different functions. Eject a disk for safekeeping, and delete files. Most people don't keep things for perpetuity by throwing them in the bin. "The point, then, is that the object of the mental model should not be what the computer is doing, but what is going on in the representation - the context, objects, agents, and activities of the virtual world" (Laurel 1993 pg 131).

Metaphor can become disadvantageous at a later stage, when the user progresses to a more advanced level. Helping a person's transition from a novice to a more advanced user necessarily involves complicated system applications where a simple metaphor becomes unworkable. Making the novice's establishment of their mental model too easy could lead to cognitive overload when the user advances beyond the metaphor's scope (Laurel 1993).

Metaphor can become a dead weight in interface design. It can limit ways in which the designer presents the narrative, because once a metaphor has been established, every part of the design, every function of the interface has to relate to the interface metaphor. The interface metaphor may even interfere with those

metaphors that are contained within the narrative itself. If an interface is developed containing objects do not create a chain of associated meaning, then its behaviour can be freed and not be tied to an introductory model (Nelson 1990).

Well thought out and unifying ideas are an alternative to interface metaphors. Narrow metaphor can limit the creation of something that is genuinely new and can pose limits on the virtual experience of the story. If consideration is given to the look and feel of the environment as well as the use of the narrative devices, then an entire sensory experience will be developed (Nelson 1990). The interactive narrative should be regarded as a complete experience, with every detail interwoven into the plot, the characters and the story. This integrated structure necessarily involves the design of the interface, and the best metaphor for an interactive narrative is that of the story itself. The interface should be transparent and should contain conceptual representations of the principals contained in the story rather than depending on a metaphor to drive the interaction. This function is best left to the story.

4.3.5 Icons aka Glyphs

In literary theory, icons are created with the use of metaphor. The metaphor, when situated within a sentence becomes the *verbal* icon for the connoted mental image. A written or aural representation of a real-world object, evoking a virtual image that creates meaning in the mind of the reader. It is symbolism in an abstracted form – words on a page represent an idea, an image, an object or a thought. But icons exist in our lives outside the literary realm. They confront us on road signs, in restaurants, in our schools and on our cars, the *pictorial* representation of a concept, creating meaning and understanding in the mind of the viewer.

It is thought that most written languages began as iconic representations, pictures representing real life objects. These images over the centuries became formalised and abstracted into the written languages that we know today. The use of iconic representation on the computer screen takes humans back to the beginnings of language. The representations are more realistic, more easily understood by the user. Once the image has been recognised, icons require less in the way of cognitive processing. Images remain in memory longer than words and are more easily translated into meaning.

That metaphor and icons become married in interface design should come as no surprise. Icons are the symbols that are used to represent the overall screen metaphor. If used as conceptual groupings, the meaning and function of the screen icons (when metaphor is used correctly) should make navigation through the story and the use of the interface intuitive and easy. The various icons created by the designer personify the metaphoric concept.

But iconic representation eases interface use even when an overall screen metaphor is not used. Icons do not have

to be encapsulated in a metaphoric confine but are equally useful when simply doing what they do best: pictorially representing a concept. If an icon is to be used in the navigation through a story, there is no onus on the designer to bind it to a metaphor. Arrows, buttons and scrollbars are all icons, and exist in all sorts of applications, devoid of metaphoric ties. In fact a scrollbar represents a function that does not exist outside of computing. What it does is entirely novel: the movement of a larger image within a constrained space. The closest metaphor would be the sliders that turn the volume up in stereos, but that metaphor is associated with sound rather than images. A scrollbar is an example of an icon that represents a new type of function (Rutherford, 1997).

Icons on a computer are closely related to what they *do*, their function. They are more than just the pictorial representation of a concept and are highly interactive. Their purpose is to elicit a response. Click on it, and something happens. Because an icon is so interactive within the screen discourse, when it reverts back to its traditional purpose – the representation of a concept – a sign devoid of function, the user is left puzzling at its presence. Why doesn't something happen when I click on it? This is true not only with the use of icon in the interface, but also within the narrative. Icons on a computer screen take on an added layer of meaning, that of functionality. An iconic representation brings with it the expectation of interactivity.

Space is also a consideration in user interface design, and icons take up large amounts of it (Sutcliffe 1988). Icons create screen clutter. And if the metaphor the icon represents is badly thought out, the result is screen junk, symbols and representation that obscure the function of the computing system (Nelson 1990). When a screen becomes too cluttered with icons, the effect on the user is confusion. One way of reducing visual clutter is to use sound in conjunction with visual icons, adding an extra sense in the interpretation of the functionality. Auditory icons present information about several aspects of an event, conveying a multidimensional organisation. Auditory icons can be organised so that similar functions can be represented with similar sounds (Mountford and Gaver 1990). The use of sound adds an extra dimension to the interface, and sound often has the effect of increasing the realism of the interactive environment.

The effective use of icons shortens the learning time of the user and simplifies operations for both the novice and the expert. Icons do, however, have limitations. People interpret images differently, and as a result, icons should have some sort of text associated with them that clarify their function. If the icon itself is too small to incorporate a word in its permanent representation, pop-up help balloons, or some other type of labelling, system is a useful addition (Sutcliffe 1988).

Icons work well for concrete objects, such as tools, files, messages, but their descriptive power is limited when the concept trying to be portrayed is abstract, such as "use" or "sort" (Sutcliffe 1988). Once icons are used to represent abstract ideas, they become symbols. Symbols tie together chains of reasoning. The trouble with symbolic language is that it is easier to write the patterns than it is to read them. Unlike paragraphs, or lists of words, symbols have no order that they can be sorted into, no priority of access. The participant has no strategy to employ in the interpretation of an unfamiliar image. (Kay 1990). The use of symbolic language makes understanding the interface even more difficult. People find it very hard to

interpret a string of symbols. The meaning of each symbol has to be divined, and then the associations between each have to be interpreted before the meaning can be established.

Icons can generally be categorised into three groups. Those that portray **concrete** objects, those that are **symbols**, and a **combination** of the two. Functional icons are most meaningful when used in combination, allowing the user to interpret the meaning behind the representation. This requires the user to be familiar with certain conventions as portrayed by the abstract symbols (Preece et. al 1994).

The representational form of icons can be broken down further into four iconic types that represent how the underlying concept is being portrayed. These are *resemblance* icons, those that show the concept through an image that forms an analogy with the concept. *Exemplar* icons are pictorial examples, such as a knife and a fork to represent a restaurant. *Symbolic* icons are used to convey a referent that is at a higher level of abstraction, the wine glass with a fracture through it to symbolise “fragility”. And *arbitrary* icons, whose meanings have to be learned (Preece et. al 1994).

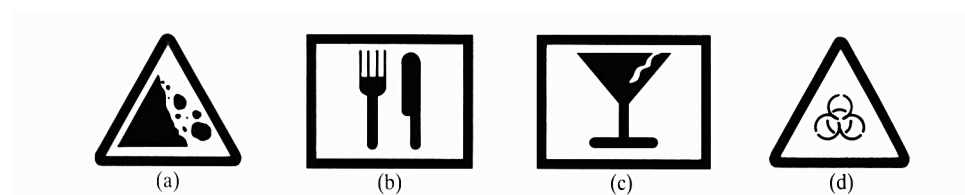


Figure 23 Different iconic types a) Resemblance b) Exemplar c) Symbolic and d) Arbitrary

If an iconic image is overly complex, it is difficult for a person to solve its meaning, and even more difficult for them to understand its function on a computer screen. “An image of complexity must therefore be one that has already been learned - essentially as a single symbol - regardless of the apparent complexity of its parts. An image that consists of two or more already learned images cannot have much more than “an association” with its sibling images. Connections between sub-images are likely not to be interpreted correctly” (Kay 1990 pg. 203). So, the use of symbolic and arbitrary iconic images which represent functions are difficult for the user to understand and should be avoided. If more than one image is used to represent a function, it is likely to be misunderstood. Meaningful iconic representation in the interface employs the *representative* and *exemplar* types, those that show a clear association with their function.

The problem with using icons in an interactive narrative is that they can get in the way of the story. The user can get so involved in using the interface that it detracts from the interactive experience of the narrative. Permanent icons can be an excellent means of navigation and interaction, but the main purpose is the story – the graphics, the sound, the *experience* – and not the interface. The use of icons should be integral to the interaction with the story and should not be used as ornamentation. An example of an interactive narrative that uses the minimum of iconic representation is *MYST*, (Miller & Miller, 1993) where the use of icons is limited to the cursor changing to a hand, indicating how the user can navigate, and how

they can interact. The icons and functions are context sensitive, only being relevant at certain times and in particular places. Here the iconic representation is minimal, yet extremely effective (Lopuk 1996).

One way of easing the use of the interface and facilitating action, is the use of animated icons. They ease the understanding of abstract representations because they can show exactly what it is that the interface icon does. Their use is an extension of the use of static icons to portray highly abstracted images. Instead of allowing the user to guess what dynamic actions the abstract symbols convey, the animation represents the function directly. To be effective, animated icons must represent the key aspects of the function, otherwise the animation will only confuse. One problem with the use of animated icons is that in order to click on them, the cursor has to cover the icon, obscuring the animation. Another is RAM. If several animations are running at once, their appearance can be jerky. A screen with multiple animations running can be very difficult to look at, and equally hard to focus attention on, so there should be some method of turning the animation off. This raises another problem. There may need to be two methods of accessing the icon, one to access the function of the icon, the other to run the animation (Preece et al. 1994). If an effective and intuitive method can be devised for each method, such as using rollovers to activate the animation and mouse-clicks to activate the function, animated icons can be an effective tool in interface action design.

In summary, the extent of the understanding of the iconic representation by the user is related to what is trying to be portrayed. Their use should be limited to the construct symbolic languages, or complex representations. They are best used for simple concrete actions, rather than abstract ideas. Their representation should tie in with function, and the metaphor (if one is used) of which they are part should describe the working of the entire program. Too many icons confuse the eye, and artistic theories come into play in terms of their composition and visual structure.

4.3.6 Image Composition and Colour

When creating screen design, it has to be remembered that constructing an image is much easier than trying to interpret it, as the designer only has to concentrate on that which is relevant at any one time. The interpretation of the image, understanding what it means, has been completed well before the designer commences work. At the time of creation, the context for the work is firmly established in the designer's mind. However, this is not true of the viewer. It is almost impossible to use the foreshadowing used in literature to build up the context of a scene in art, as a work of art is presented without temporality. The whole of the work can be accessed at once, with no guidance as to which part should be looked at first. It is modeless, as any meaning contained in a static image is accessible at any time (Kay 1990).

This is why the rules of artistic composition have been employed over the centuries. The designer should arrange the elements of an image so that the viewer's eye is guided without the viewer necessarily being aware of the guidance (Kay 1990). Composition is a device constructed by the designer to help in the

assimilation and interpretation of the image, forcing the viewer's eyes to concentrate on the design elements that are seen to be important. It is also a way to help understanding, drawing the eyes to one object, then another, revealing detail with further contemplation.

The use of shape, light, curve and line allows the user's eye to be guided, so that certain details are revealed in sequence. Geometric shapes and concepts can be used to create these "lines of force", so that the shape that the eye traces across the image follows a geometric pattern. That is not to say that the geometry forms the elements of the image, rather the composition can be arranged along geometric principals, moving the eye in a circular motion, or following the shape of a cross for example. There are certain rules to composition that have been used over the centuries to aid the artist in the layout of their work. These include:

- Perspective, how images decrease in size the further away they are, culminating in a vanishing point;
- The golden mean, a geometric theory on how design elements can be placed about five eighths of the way along a line, or within a rectangle, to create an aesthetically pleasing image;
- And dominant mass, where a single object can dominate the image, encompassing all of the detail and focus of the image, and all other design elements are excluded (Kerr 1997).

Such methods have enjoyed currency within a particular historical era, and new "rules" to do with the reading of shape and form emerge on a regular basis.

Beauty is in the detail. Detailed images enhance understanding and allow higher levels of meaning to be assimilated. However, the realm of the highly detailed image is in the *content* of the narrative, the pictorial presentation of the story, rather than the *interface*. Complex interfaces are counterproductive, but detailed content is not. Content is important, the more detailed the image information is, the deeper the levels of understanding. This appears to be a paradox, but the trick is in how the images are organised. If an image is intended to convey information, it can be organised in such a way that detail does not become clutter, or screen junk. By using colour to separate the different types of information, and by eliminating or toning down unnecessary items such as grids, guides and rules, the designer can simplify the visual complexity of an image (Tufte 1990).

Negative shape and rest spots are important in an image of complexity. Negative shape can convey as much information as positive shape, allowing the viewer to fill in the cognitive gaps in an image. Equally, an image can become overloaded. If lines dominate and fight the eye (unless this is the intention) they should be given variations in width, to allow the eye to rest so that the assimilation of the entire image can be achieved. By varying line width and using different tones and colours, the designer can add fine detail to an image without these clashing with the major design elements (Tufte 1990).

The human eye is extremely sensitive to colour variations, with some trained people able to distinguish over 1 000 000 colours. For practical screen design purposes, however, more than 30 colours in an image intended to convey information, such as a map or data representation, becomes counter productive. Colour

can be used in image design in four fundamental ways: “*to label* (colour as noun), *to measure* (colour as quantity), *to represent or imitate reality* (colour as representation), and *to enliven or decorate* (colour as beauty)” (Tufte 1990 pg. 81). But use of colour should be guided by good ideas, and carefully thought out design. Very bright and pure colours, when used over large areas, make an image loud, busy, unrestful and difficult to look at. Using complementary colours has the same effect, as colours opposite each other on the colour wheel leave a residual after-image in the eye. They fight the eye, each demanding equal attention. Add a splash of green on a red square and observe the garish result. However, the use of bright colour on a neutral background highlights points of interest and serves as a visual italicization of an object. The use of colours that are to be found in nature are best for large areas on a computer screen, with spot highlights of strong colour for emphasis (Tufte 1990).

The surrounding environment determines the perception of colour. Placing one colour against another can alter the perceived colour of one or both colours. Any colour is influenced by its size, shape of the area it fills, and its context. If a specific colour scheme is important, then care must be taken to protect it from colours that could alter its appearance. Ambient lighting also effects the colours seen on the screen. It must be remembered that the colours created by the designer may not be those seen by the user. There are adjustments that a user can make to the output of the phosphors on the screen, through the brightness and contrast adjustments. So viewing the design in a number of lighting conditions and screen settings is a useful precaution (Saloman 1990).

It is also worth considering that older people are less sensitive to colour, often need higher brightness levels, and have difficulty discerning different shades of blue. Eight percent of males, and half a percent of females also experience some sort of colour blindness, most having trouble discerning red from green. So if these colours need be used in proximity to each other, it may be useful to use different shades (luminance values) to differ between the different hues. Colour can therefore be used with other cues, such as pattern, shape or location in order to overcome some of these problems. Associating objects with colour can create a powerful impact. Those little yellow boxes found at the film counter are instantly recognisable as Kodak (Saloman 1990). Associating colour with a specific object type early in an interactive narrative effectively foregrounds meaning for later recognition.

Another way to overcome colour considerations and add another level of interactivity, is to allow the user to adjust the colours of the interface (Saloman 1990). This playful device could be incorporated into the narrative, with the interface not just being used as a tool, but integrated into the story itself.

4.4 Summary

The production team needs to have a clear understanding of the mental model that the user will build up as they use the product. Without this the designing and programming of the system will be inconsistent

Interface Design Guidelines

with the user expectation of the system's performance. To conceptualize this in terms of genre is useful, as it enables the production team to maintain their conception of the program such that it is consistent with the user's expectations.

Understanding how people appear to behave when confronted with problems and puzzles is important when designing and writing for the interactive narrative. These issues do not need to be considered in traditional narrative, because the narrative outcome is not dependent on the solving of puzzles or problems. Reducing the cognitive load for the user makes use of the program easier. If the production team understands the current models of how human memory appears to work, and the constraints that human memory will place on their organisation of the program, the cognitive load for the user will become manageable.

The use of interface metaphors and icons is one way to allow the user to establish their mental model of the program. The production team should comprehend however the constraints that interface metaphors place on the functionality of the system, so that the metaphor remains consistent with the function of the program.

Finally, the design of the interface should involve sensitivity to design issues, such as image composition, use of colour and use of detail in screen images, especially if the purpose of the narrative is to inform.

If the production team correctly addresses these issues, the dialogue between the user and the computer should be successful, and the interaction an enjoyable, involving and entertaining experience.

Chapter Five: Case Studies

The aim of this chapter is to examine some existing interactive narrative titles to determine how the authors and production team have employed the various narrative methods in the creation of their project. The study of these examples will be organised in terms of genre. Popular genre models are employed, rather than classifying each game in terms of how it may be referred to in computer gaming literature, as the process of genre classification for computer games is still in its genesis. *Mech Warrior 2*, for example, has been described as a simulation, an adventure game, a science fiction game and a shoot-em-up war game.

Each case study includes a map of the narrative tension. In some examples this will mirror almost exactly that described in chapter one, that of exposition, triggering event, complication, climax and resolution. In others the narrative tension will diverge from the traditional norm.

Also included is a three-dimensional model of the event structure of each story. This is essentially a simplification of the flow-charting process as described in chapter three. The models are organised in terms of scenes and events. Each model contains large pale blue spheres, which represent *scenes* or narrative environments. Embedded in each scene are *event nodes*, which are represented by smaller darker blue spheres. These indicate the number of events or event sites in each scene. Event sites are locations of interaction, be it where a puzzle can be solved, or an object can be clicked in order to create some sort of response by the program. Linear linkages between scene are described in terms of funnels, which conceptually constrain movement and action and direct the user to a new location. The funnels represent either exposition or narrative continuation from one scene to the next. Arrows represent visual cuts where the narrative control of the author reasserts itself over the story. These cuts may be used in conjunction with funnels, where the cut becomes part of the forward movement of the plot, or separately, where the cut is a navigation device devoid of narrative meaning.

MYST:

The Mystery Story



Genre: Mystery

Target Audience: Teenagers and Adults

Publisher: Broderbund Software Inc. and Cyan Inc.

Year: 1993

Medium: CD-ROM

Presentation Location: Home

Goal: Entertain

Narrative Devices

MYST is a mystery story. But rather than drawing its influences entirely from literature, it draws from the experiential history of gaming, where the narrative environment plays more of a dominant role than the characters within the story. Mystery stories as a genre are normally distinguished by a number of characteristics, which extend into the areas of plot, characterisation and theme.

Classifying MYST as a mystery, (a fact implicit in its title, adapted from Jules Verne's *The Mysterious Island* (Carroll 1997)) allows the consumer to understand that they will not immediately grasp the story's narrative intent. Protagonists in a mystery find themselves involved in a complex web of intrigue, where events have been set in place prior to their involvement. The meanings behind the events in the plot are understood by piecing together scraps of exposition, where the overall narrative cohesion is not assimilated until the conclusion.

MYST follows this model closely, with the role of the protagonist being assigned to the player. Having been given only the smallest amount of exposition in the introduction, the participant finds themselves in an environment where he or she has to solve not only the mystery but has to actively pursue the story as well.

Case Studies

The use of first-person viewpoint creates a sense of intimacy, allowing direct interaction with the environment, and excludes any narratorial voice or imposed characterisation. The discovery of the story is part of the mystery and is achieved by exploring the island and solving a series of puzzles that have been laid in place by the character Atrus.

Atrus, who provides much of the narrative exposition in MYST through his writings and recorded messages, is nowhere to be found. He was apparently expecting the return of his wife, Catherine, to the island, and has left a note for her. By acting upon the information provided in the note, the user begins to unravel the story. Atrus is the creator of the island of MYST, and has been betrayed by one of his two sons, either Aganar or SIRRUS. Because he is unsure which son seeks his death, he has imprisoned each within the pages of a book.



Figure 24 Aganar in his book

Betrayal forms a recurring theme throughout the story. Not only does Atrus claim betrayal by one of his sons, but each brother also claims betrayal by the other, and implores the player to bring them the pages of their respective books, either red or blue, so that they can be freed.

In order to find the pages of the books, the user has to travel through time to the different ages of the island. There are five distinct ages, Channelwood, Sound, Mechanical, Stoneship and Dunny. To access each age, the player is required to solve a puzzle. But although the user travels through time, the narrative time remains linear, with cause following effect, as the narrative “now” keeps pace with the “now-point” of the user.

As with all mystery stories, the participant has to try to figure out the motivations behind each character’s behaviour. In the mystery as much is concealed by a character as is revealed. Aganar resides in the red book. Physically scruffy, with greasy dark brown hair, his attitude is manic and aggressive. SIRRUS on the other hand is well groomed and refined. His bearing carries an aloofness and arrogance which is equally unappealing. MYST’s outcome ultimately depends on the decisions and actions of the player, who has to

use his or her intuition and judgement as to the character of the two brothers. There are four endings to MYST, and if the player trusts the wrong character, he or she is in turn betrayed. If the correct conclusion is reached, the brothers face the ultimate betrayal.

The Constructed Reality



Figure 25 The Island of MYST

The use of three-dimensional rendered images, in conjunction with the Hypercard authoring platform creates a certain slowness to the interaction which is well suited to the contemplative nature of the mystery story. MYST is unlike other 3D interactive games in that the use of static images evokes a sense of timelessness. The shadows from the trees remain perpetually fixed at late afternoon. The feeling of contemplation is reinforced with the use of music, which builds tension and creates the impression that the player is at times getting closer to a narrative solution.

Using a click-and-advance navigation, the player is able to advance through the solitary world of MYST. Each mouse click creates a visual edit, which conceptually draws the user deeper into the narrative. Each edit is linked to changes in sound perspective, which, when used in conjunction with shot size, gives the impression of forward movement. But this movement is never excessive, the eye is at no time dislocated from the body.



Figure 26 Sirrus's chamber in the Channelwood

The constructed world is a heightened realism, the images mimicking, but not quite reflecting reality. MYST portrays a possible future that draws strong metaphorical links with the past. The design style of many of the interiors is Victorian, with walls decorated with spears and swords, creating comparisons with *Dungeon and Dragons* fantasy role playing games, as well as drawing literary links with *The Mysterious Island*, which was set in the late 1860's. The science of MYST is based on the mechanical, hydraulic and electric rather than the electronic. The technology consists of gears and levers, valves, knobs and clockwork, and forms a strong allegorical link to existing movies such as Terry Gilliam's *Brazil* (Carroll 1997). These transmedia references form a metastructure of comprehension, with the elements in MYST being both familiar and alien at the same time. It is a world that is limitless in its possibilities, creating the impression that it extends beyond the bounds imposed by the story.

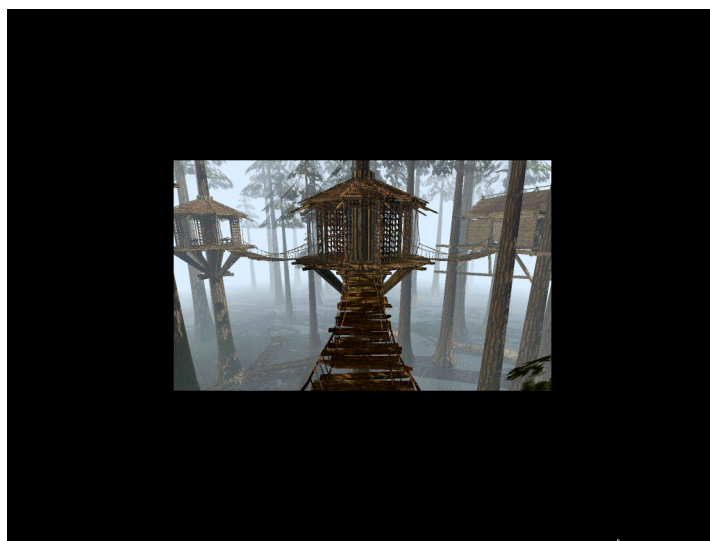


Figure 27 The black frame: a neutral space for discourse

But while the conceptual world of narrative meaning steps beyond the computer screen, and reflects back into reality, the physical representation is constrained not only to the screen, but is further limited by a black surround, which enframes and narrows the field of view. This black border, present as a way of standardising the narrative space for different sized computer screens, creates a no man's land between the "here" and the "there". Although this effect is no doubt unintended, the player's eye is focussed on the active screen space, the black cutting out external distraction.

The story therefore exists as a frame within a frame, a narrative world within the computing environment. The space of discourse between human and computer becomes neutral, where neither party attempts dominance. The story unfolds as the result of a tentative exploration of cause and effect, where the player reaches past the neutral space to interact on equal terms.

Interactive Story Structure

The organisation of MYST draws very strongly from the world structure, where navigation within each space is modeless. But at the same time, the authors of MYST have created a narrative tension that mirrors that of traditional media. There are a number of ways that an author can impose cohesion in an environment where the user has to explore the evoked space and seek out the story. The makers of MYST have provided a number of short location and event based linear sequences, where the reward for interaction and puzzle solving is further exposition.

Each snippet of information creates a cumulative effect, where interest in the story grows with each successive exploration and return from the ages of MYST. Order of access of the ages bears no relationship to the narrative exposition. It doesn't matter what order the player finds the pages in, the narrative of the brothers is told sequentially. Figure 28 describes the rising of narrative tension with each exploration, culminating in one of four possible outcomes, three of which are short-circuits, or non-conclusive endings. (Only two endings are illustrated.)

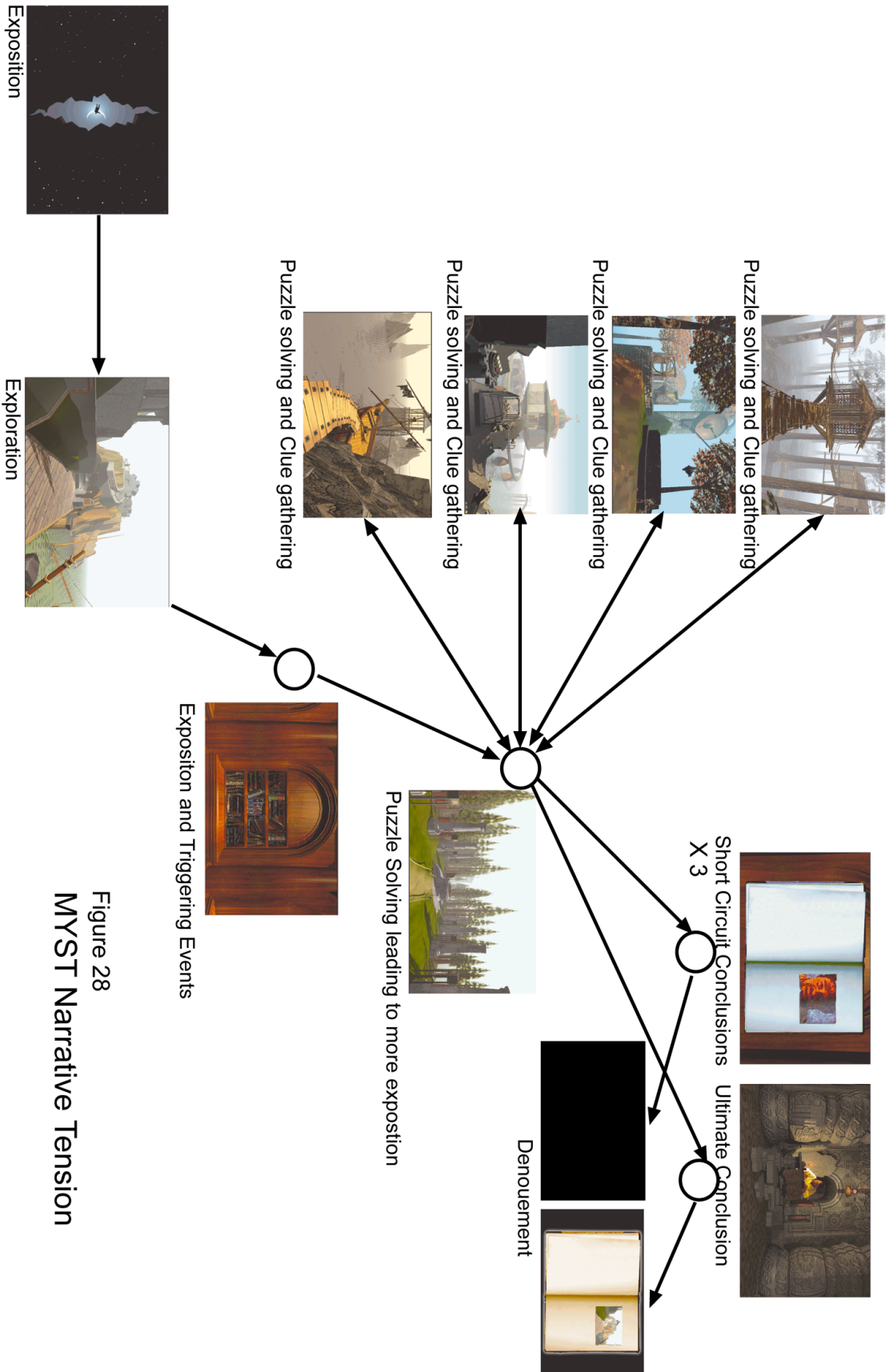


Figure 28
MYST Narrative Tension

MYST contains six different interactive environments (represented in Figure 29 as large pale blue spheres). Nestled within each scene, are a number of sites of interaction. These sites of interaction, or event nodes, break the narrative surface, and form a symbiotic relationship of cause and effect, hindering or helping the user to achieve their goals.

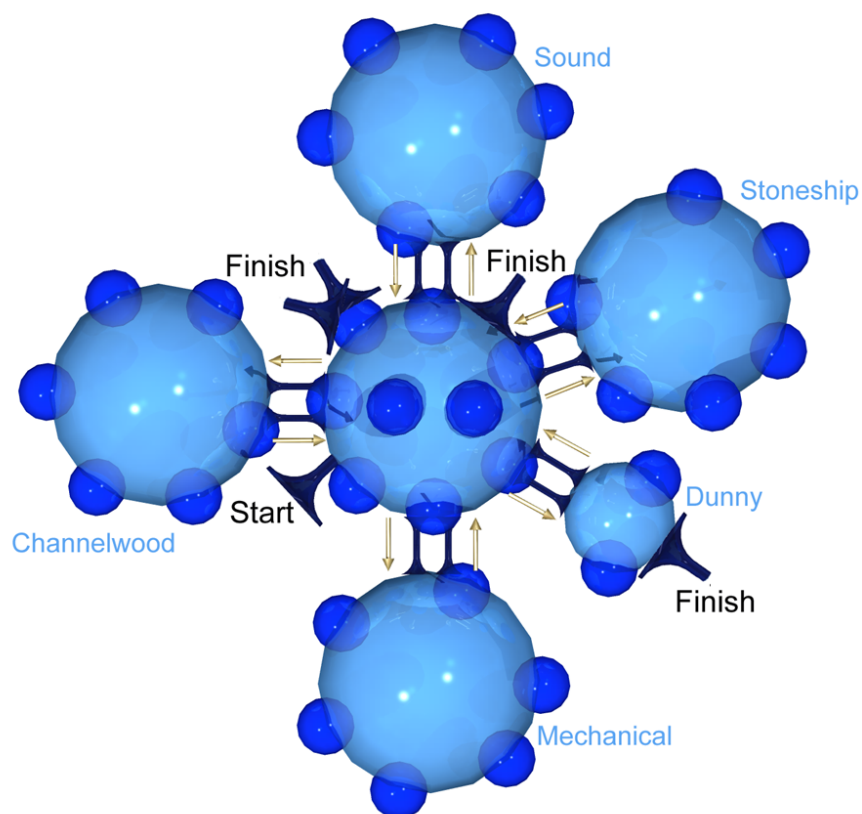


Figure 29 Events, scenes and narrative linkages in MYST

A thematic link is formed between the age and its respective puzzle on the main island of MYST. Nodality is therefore used to draw narrative cohesion between the puzzle, which when solved provides the access to the age, and the subsequent narrative environment. This repetition of theme not only allows the player to make sense of the different evoked spaces, but also creates narrative linkages back to the story of Atrus and his inventions. Thematic repetition therefore binds the meanings in the story together into a tightly structured discourse.

Each event node in the different ages of MYST has one of two purposes. Occasionally an event provides additional narrative exposition. But more commonly, the events form a web of interrelated tasks that, when solved, provide the egress back to the main island. So, the player has two goals when they enter an age, to find the pages of either the red or the blue book (the game allows only one page to be returned at a time to the main island) and to work out how to return. This is true of all of the ages except for the Dunny age, which forms part of two of the endings, one which is a false ending, the other the ultimate ending, which contains extensive narrative exposition, and lays the groundwork for a sequel.

Each of the endings in MYST forms a narrative closure. These consist of short linear sequences where the user no longer has control over his or her movement. These are represented as funnels leading out of various environments and event nodes in Figure 29. But although all four endings have closure, in the short-circuited endings the user is left with the dissatisfied feeling of having been cheated out of a proper story. The player is tricked, or trapped by their own lack of intuition and judgement and feel all of the frustration of an untimely end.

Summary

One of the reasons that MYST has been such a successful game is its integration of traditional narrative devices with the interactive story structure. The authors of this game have taken the best aspects from narrative and gaming and combined them to create one of the most popular interactive narrative experiences. To date the unit sales of this game stand at 3.5 million units, with estimated profits of US\$20 million. (Carroll 1997) One of the reasons for MYST's success is its combination gorgeous graphics and an intriguing mystery story, which is revealed inch by inch through interaction and puzzle solving.

MYST does suffer from two things. One is the lack of movement in the interaction. Although the stillness does create a very contemplative and peaceful environment, MYST would benefit with more QuickTime movie and animation sequences. The second weakness in MYST is the narrative distance between the user and the characters in the story. The island of MYST is a very lonely place, and the relationship between the user and the characters in the story is kept at arm's length. This narrative distance is appropriate for the mystery story, where the motivations of characters are often at odds to that of the protagonist, but the relationship between the user and the characters is never really formed. So, when the player reaches the final outcome, it is hard to care about the fate of any of the characters.

You Don't Know JACK:

The Game Show



Genre: The Game Show

Target Audience: Teenagers and Adults

Publisher: JellyVision Berkley Systems Inc. Berkley CA

Year: 1995

Medium: CD-ROM

Presentation Location: Home

Goal: Entertain/Educate

Narrative Devices

You Don't Know JACK is unashamedly a game show, although the word “show” is perhaps a misnomer, because very little of the game’s environment is *shown* at all. It draws its roots, inspiration and *raison d’être* from the television trivia games shows that have been popular on and off for the last thirty years.

Categorising the genre as a game show would appear to be contradictory to examining an interactive narrative. Game shows are not usually considered *narrative* at all. But *You Don't Know JACK* does contain quite a tight narrative structure. The player is placed within the games show context from the very outset, where he or she takes on the role of contestant. The story takes place in a television studio, in the organised chaos just before a game show is due to go to air. The sound from the studio and control room initially is techno babble, but somewhere between the control room talkback and the time cues from the floor manager, the contestant is introduced to the host, Cookie.

Cookie is the driving force behind *You Don't Know JACK*. He is the stereotypical game show host, with the polished patter of a professional television personality. Cookie initially allows the player to set the parameters of the game, how many players, name of players, and how many questions. If the player’s name

is common, Cookie addresses the contestant by name, as a second person addressee. This has the wonderful effect of focussing the mind back on the game if it starts to wander. Cookie's character does not develop during the show, but keeps the action moving, providing the low down on progress and the accumulated score. The conflict in the game is essentially player against themselves, or the other players, depending on how many people choose to play the game.

The floor manager counts down from ten, the director fades the desktop to black and the show begins. Recognising *You Don't Know JACK* as a game show immediately places the participant in context. Game shows, especially trivia ones such as this, fire questions at the contestants, who have a set time to answer. Each correct question adds points to the score, each incorrect one results in points deducted. On or near the mid-point of the game, the player is presented with a gibberish question, where a phrase or part of a song has to be guessed. Usually, in television game shows, there is a "beat the clock" round, and in the case of *You Don't Know JACK* this acts as a narrative climax.

The narrative feedback in the story depends on the actions of the user. Correctly answered questions result in praise and punchy comments from Cookie, wrong questions lead to wise crack remarks and commiserations. If the participant is playing as a single contestant, at the conclusion of the game Cookie tells them how well they have done. These comments can be deflating if the contestant feels they have done well, but Cookie informs them that they could have done better. There is ultimately only one ending in *You Don't Know JACK* but the path to that single ending depends on the user. The interpretation of the story is also left to the player, as the story is that of the participant's success or failure in the show.

The Constructed Reality

You Don't Know JACK is unlike any existing game show. It's has been pared down to its bare essentials, the sound, the simple graphics and the hype. Everything else has been discarded.



Figure 30. Simple graphics and lots of sound.

This is a marked contrast to other CD-ROM games, where the visual dominates the aural. The connoted world in *You Don't Know JACK* constructed mostly from sound. This is an excellent interpretation of the medium, because the user is able to focus totally on the task at hand, answering the questions, rather than being unnecessarily distracted by highly detailed graphics or in-depth character analysis. By using only the simplest of graphical representations, the producers have saved memory, which is then expended on the multiple-choice questions.

The evoked world in *You Don't Know JACK* is highly foregrounded, concentric in the sense that there is no depth behind the facade. This is true in a narrative sense as well as the cognitive. There is no chance to fully develop a deep relationship with either the host or the environment, as the participant is too busy interacting.

The use of a professional and slick soundtrack adds a high-quality sheen to the production, but is needed because the sound carries the show, with the graphics used to enhance the soundtrack and provide visual cues to the player.

It is interesting to note that although *You Don't Know JACK* borrows its genre and metaphors from the televisual, its representation is more evocative of that earlier medium, the radio. The host has the slick professional patter of the radio disk jockey and carries much of the forward movement through the game by the pacing and quality of his voice. The rather than being a projection, where the created world is a mirror of reality, the evoked world rather has to be sought out. The sense of an evoked world becomes internal, where the imagery presented by the audio creates mental icons for the imagined world. The visual imagery becomes prop, a facade, which never really allows the player to glimpse the narrative possibilities underneath.

Interactive Story structure

You Don't Know JACK is a different game each time it's played. It provides 20 hours of non-repetitive gameplay. The interactive structure is therefore finite; with questions being repeated after extended play time. However, because each category has three multiple-choice questions, subsequent games can still be quite different in content to the earlier versions. There are over 800 questions in *You Don't Know JACK*, which means the chance of having one game identically match a previous one is minimal. This is a very good use of the interactive environment; the game feels fresh on each play.

After setting the initial games parameters, the linear introductory sequence concludes, and the game begins. Each question is introduced by a jingle, and Cookie informs the participant how many game dollars each question is worth. The user is then asked to choose a category. This determines the type of question asked, but the categories are not intuitive, the meaning behind each category's name can be as confounding as the question itself.

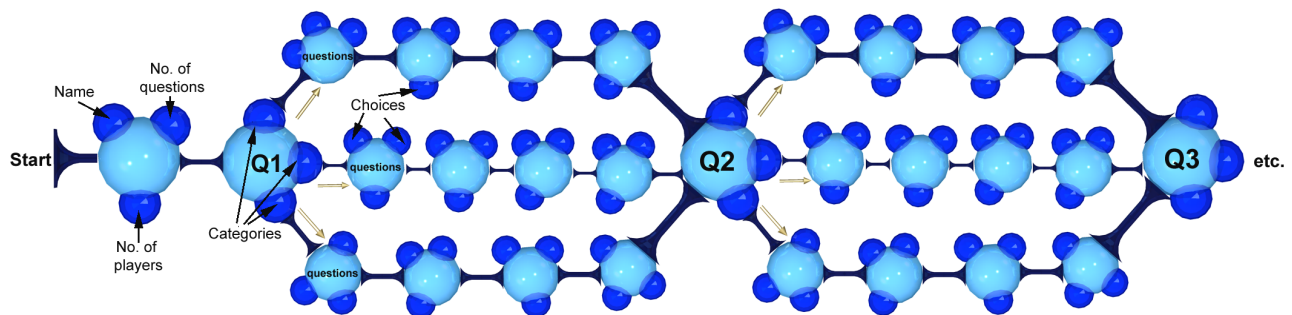


Figure 31 Question structure

Figure 31 shows the scene and event structure of two questions. Each main question has three categories, which in turn leads to four consecutive quizzes, which may have three or four choices. The structure is linear, so once the category is chosen, there is no going back to sample the other questions. Progression through the game is not dependent on answering the questions correctly; rather points are added or deducted from the player's score.

The game time is finite, the user is able to decide if they wish to be given eight or twenty-one questions. Each question is timed, if the participant does not answer the question in the set time marks are taken off his or her score.

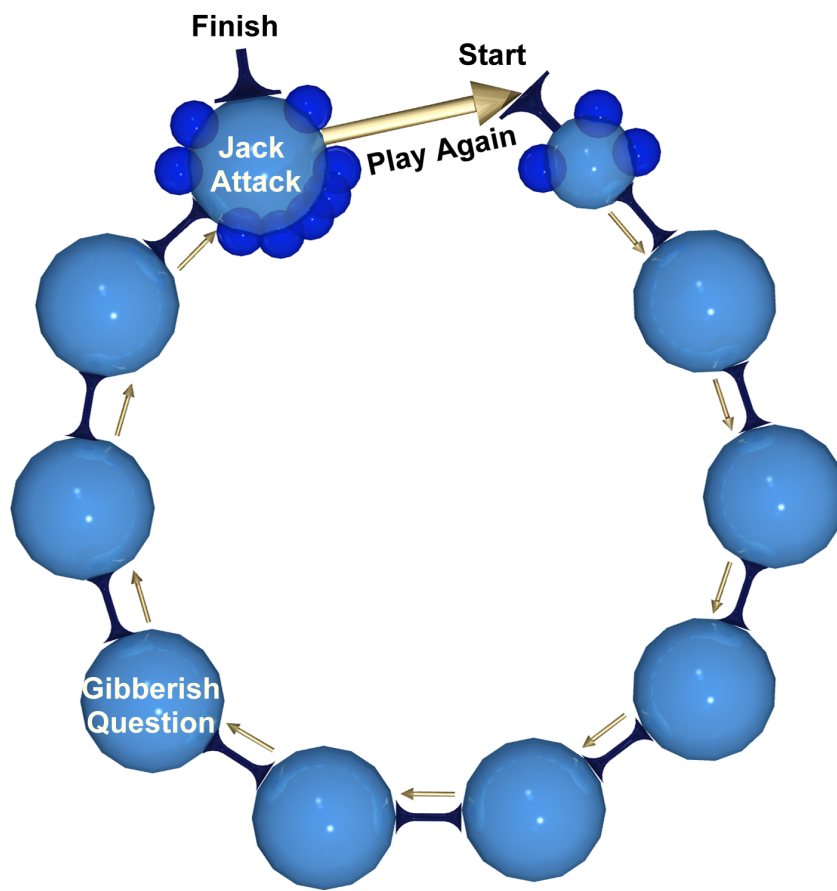


Figure 32 Overall linear story structure. (See Figure 31 for detail of questions 1 and 2)

Figure 32 describes the overall linear structure of *You Don't Know JACK*, where the user has chosen only eight questions. The structure is linear, so the funnels constrain action in one direction only, as indicated by the arrows. There is no backtracking allowed by the user. Only at the conclusion to the user's round of questions, after the score has been given and the titles roll, does the user hear the behind the scenes again. The exit funnel indicates this final linear and non-interactive sequence, but the player can play again if they wish, as indicated by the large arrow looping back to the beginning.

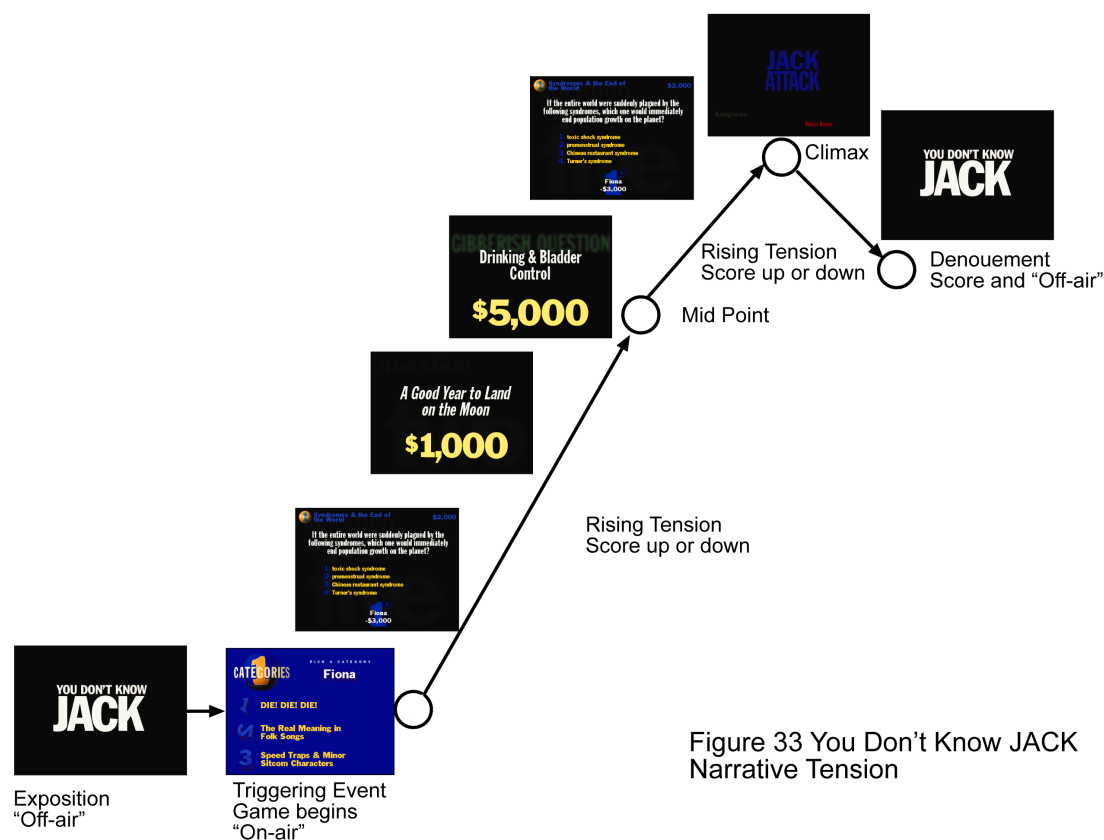


Figure 33 You Don't Know JACK Narrative Tension

The map of narrative tension in *You Don't Know JACK* is very traditional. (See Figure 33) It is interesting that the producers chose a linear structure, therefore maintaining narrative tension in a game show format that would not usually be thought of as narrative. But there is clear exposition at the beginning and the end of the game, with a very identifiable climax right near the end, the Jack Attack.

There is a meta-narrative that threads its way through different games of *You Don't Know JACK*. There are random occurrences where Cookie phones someone to ask them to answer a question. On successive games the player may encounter another random event, the person ringing back with the answer. Although occurring infrequently, these events form a narrative linkage *between* the games.

Summary

You Don't Know JACK uses the game show formula, which can be used again for subsequent products. Instead of the questions being general knowledge, there is now a *You Don't Know JACK Sport* for the sporting fanatics. The game has also been integrated with the World Wide Web, with sites available for downloads of additional questions.

You Don't Know JACK is a CD-ROM created in response to the currently popular trivia board games and television shows. It unashamedly borrows its ideas from the televisual, in a unique and highly innovative manner. There is one small disappointment in the game, however. Although each sequence of questions

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do not repeat themselves until 20 hours of gameplay, the opening and closing sequences do repeat on each game. This is a shame, as the producers have worked hard to make every game experience unique. A narrative way of approaching this would be to work another continuing story through each successive opening sequence. Small sections of the beginning and the end of each game could be changed, so that the overall story of the characters and conflicts within a TV station could be revealed on successive games. In that way the entire interaction, the whole 20 hours of non-repetitive gameplay would form a meta-narrative in itself, where the overall experience becomes one large story. The inclusion of random narrative events moves some way towards this structure, but the idea could be developed more fully.

Mech Warrior 2

The Science Fiction Story



Genre: Science Fiction

Target Audience: Teenagers and Adults

Publisher: Activision Inc. U.S.A

Year: 1995

Medium: CD-ROM, Playstation

Presentation Location: Home

Goal: Entertain

History

The BattleTech story was started in the mid 1980's by the FASA Corporation in the U.S.A with the release of a game that was initially called BattleDroids. It was a board game, with elements of role playing in it. The game, which was renamed BattleTech, became enduring because of its complex historical background. What started as a simple board game grew into the BattleTech Universe, and spawned over a dozen game reference, scenario and source books, 23 novels, as well as comic books, action figures, a cartoon series, the Virtual World BattleTech Centres, numerous board games and several computer games. Over a million words have been written about the BattleTech Universe, which makes it one of the most widely read and written about connoted universes ever created. (Pardoe, 1995) *Mech Warrior 2* is one of the computer games that situates itself in the BattleTech Universe.

Narrative Devices

Mech Warrior 2 is a science fiction adventure story, set in the year 3057. The narrative history to this game is rich and well formulated, but not essential to the enjoyment of the game. Humanity has spread through the stars, and formed itself into 20 autonomous clan groupings. The humans of these distant stars are different from those who remained on Terra. They are genetically engineered and consider themselves superior to those people who remain on Terra, born of parents. The clans have grouped themselves into two philosophies, The Warden Clans, led by Clan Wolf, and the Crusader Clans, led by Jade Falcon. Each philosophy determines their outlook on their role in relation to the Inner Sphere (Terra). The Warden Clans see themselves as guardians of the Inner Sphere and would defend it against any invading foe. The Crusader Clans see their destiny in uniting the Inner Sphere under their rule and see the means of achieving this through conquest. (Pardoe, 1995)

Classifying the story as science fiction allows the suspension of disbelief when confronted with a fictive reality bearing little resemblance to the world that currently exists. Science fiction is usually set in some distant future, with an emphasis on technology and space travel. *Mech Warrior 2* fits this genre exactly.

The plot begins with an opening sequence, which outlines the emerging conflict between the Wolf Clan and the Jade Falcon clan. The player is then presented with three choices, either to choose their allegiance, or to immediately contest a Trial of Grievance. By choosing a Trial of Grievance the player essentially short-cuts the exposition and moves directly into the action. If the choice is to choose an allegiance, there follows a short animated video sequence that outlines the philosophy of the chosen clan. This philosophy extends beyond the political system and aspirations of each clan group, into the world of spiritualism and prophecy. Each clan sees themselves as having a destiny and see themselves as defenders of that destiny.

Before entering the Clan Hall, the user must create a character for his or herself. The same screen enables the player to set the games parameters, the level of difficulty and the combat variables. The Clan Hall is the hub, it is where the now created character can jump off to training missions, learn more about the BattleTech Universe, or equip themselves with a Mech before embarking on a series of missions, which are called Trials of Grievance.

A Mech is basically a two-legged tank, capable of high speeds and equipped with a number of weapons, from lasers to artillery rockets. Each Mech has four different weapon configurations, contributing to the overall body weight. Each mission has restrictions on how heavy the Mech can be, with the tonnage limit limited to that of the opposing Clan. Each chassis configuration has a name, such as Hellbringer and Timber Wolf, reflecting the war-like nature of the game.

Mech Warrior 2 makes use of character guides. In the Cadet Training room, there are six missions, each with varying levels of difficulty. Escorting the player on each training mission is a trainer, another Mech, who helps to outline the mission and explains some of the functionality of the player's Mech, and how to

achieve the mission goals. After the completion of each training mission, the player returns to the Clan Hall, where they can either undertake another training mission, or enter the Ready Room, equip themselves, and launch into a mission proper.

In some of the later missions the user can also choose companion Mechs in the Ready Room. These companions are the backup force which helps the player achieve his or her goals on difficult missions. They play the role of secondary characters to the main protagonist, the participant. Forward movement through this story relies on the development of skill, rather than the development of character.

Each Trial of Grievance is set on a different planet, with a different set of goals. Advancement through the story is only allowed on the successful completion of the primary goals of each mission, with extra honour awarded for achieving secondary goals. If the player does not achieve the primary goals, they have to return to the field of battle until they do. The climax of the story is when the player has achieved much honour and is allowed to undertake a trial by combat, in order to reach the level of Khan, or leader.

The system of honour in *Mech Warrior 2*, and in the BattleTech Universe in general, draws its inspiration from Japanese Bushido, the Way of the Warrior. Honour forms a recurring theme throughout the game, with success or failure of missions measured in honour points. Cowardice is penalised and scorned. Although honour is an important and highly ritualised aspect of their society, Mech Warriors can also be highly treacherous.

The success of each Trial of Grievance weaves a narrative thread through the overall history of the war between the Wolf Clan and the Jade Falcon clan. Each successful mission fits into the structure of the overall narrative, and the player is able to assess where their mission fits into the overall strategy of the war. This is outlined in the statement presented at the completion of a mission. However events outside the player's control play more of a role in the strategic battle between the clans. The honour gained in each mission creates a personal narrative for the user, but does not effect the overall outcome of the war in the BattleTech Universe. In this universe the outcome has already determined, the Wolf Clan wins the war.

The Constructed Reality

The visual representation of *Mech Warrior 2* works on two levels. One is a highly detailed and pre-rendered three-dimensional environment, employing a mouse click-and-advance system of navigation. This comprises of the Clan Hall and the Ready Room. However, once the player has launched into a mission, regardless of whether it's a training mission or the real thing, the representation changes to a "rendered on the run" environment, using a joystick.

This demarcation between the two worlds is quite distinct, and in a narrative sense marks the delineation between exposition and action. The highly rendered environments create the *atmosphere* of the connoted

space, where the BattleTech history and goals of the player are outlined. The polygonal game engine is the action zone, where the personal narrative of the player is created.

Within the pre-rendered environment movement is very much constrained. The user can move to one of three areas, the Cadet Training area, the Ready Room or can view the Archive Holojector. As a result this part of the world feels highly concentric, and the connotation is of an enclosed area, rather than it being part of a larger whole. The focus is only on one or two actions that can be performed within this space.

In the games engine the connoted world is ecumenical, in the sense that it appears boundless in its extremities. While competing in a Trial, the player can move *almost* anywhere within the evoked space. There are boundaries to the battle zone, however, and the player is warned of the consequences of cowardice if they choose to move beyond the proscribed zone.

In the clan hall, the point of view is strictly first person. However, in the tradition of flight simulators, when in the battle zone, the player, using the predefined keystrokes that they enabled when choosing a character, can switch between first person internal view from the Mech, to third person external camera and satellite views.

The metaphor with flight simulators extends to the use of a disembodied female voice that informs the player of the battle status of their Mech, and mission goals. The same type of voice is used currently in many of the U.S. airforce flight simulators as the military pilots undergo their training missions. So the influences in this game combine those of the televisual, encapsulated in the highly rendered and realistic linear opening and closing sequences, the contemplation and calm of still 3D images, and the fast paced action of flight simulators. Each adds its own level of detail to the connoted world, and when combined with the text based mission statements and the Archive Holojector, a detailed narrative emerges.

Interactive Story Structure

The structure of *Mech Warrior 2* is essentially linear, with two completely different story streams. Each allegiance contains 16 missions, and along with the eight training missions gives a total of 48 different mission that the player can experience. If the player chooses to bypass the exposition and move directly onto the Trials of Grievance, they still have to choose an allegiance, but are able to control the combat variables to a higher degree. Progression through the story depends on the player successfully completing each of the 16 missions, within one of the two story streams. Narrative tension is suspended upon the player's return to the Clan Hall between

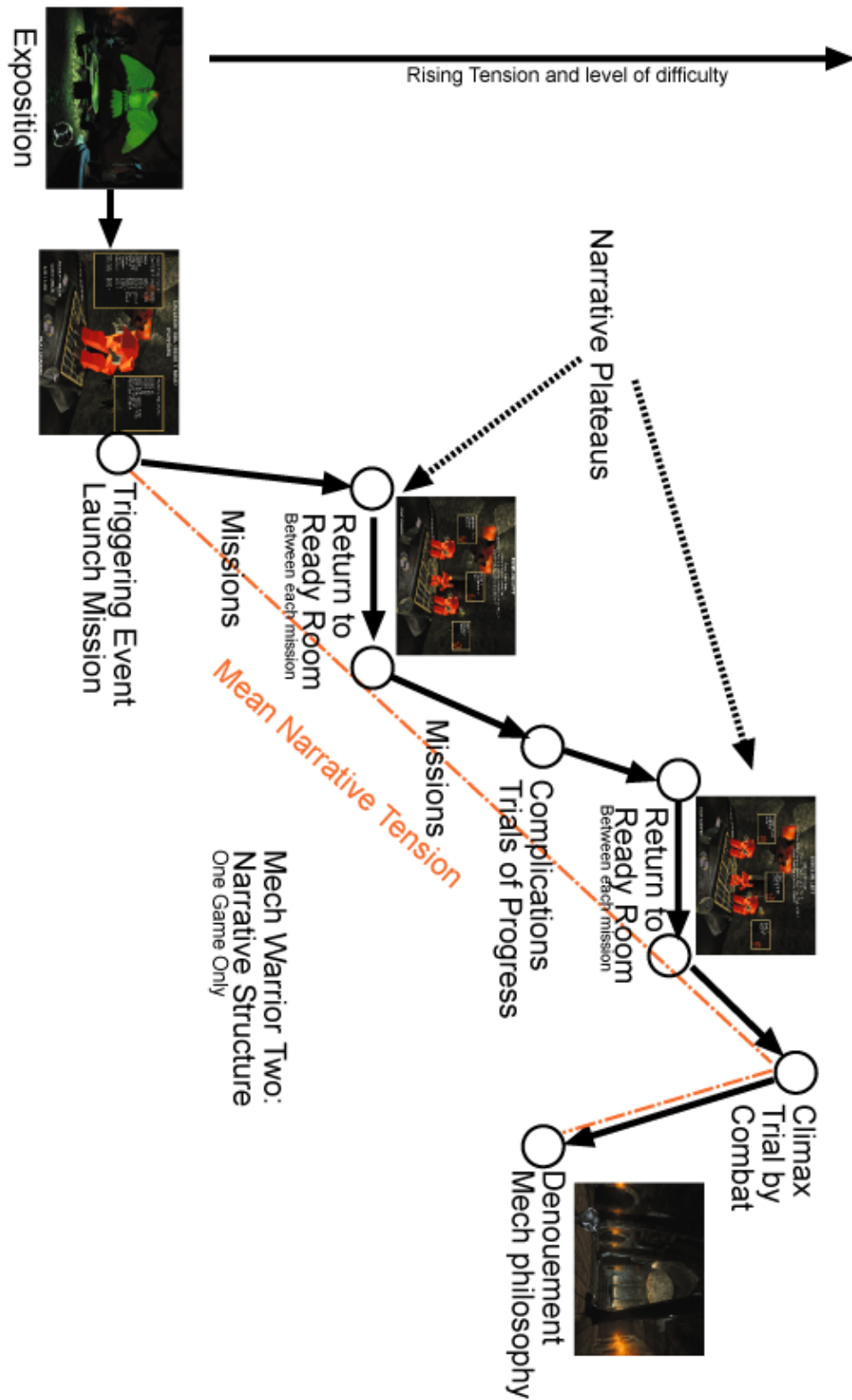


Figure 34 Narrative Tension in *Mech Warrior 2*

each mission. (See Figure 34) The rising tension therefore reaches a series of plateaus between each mission. The training missions allow the user to gain familiarity with the functionality of their Battle Mech,

and provide a narrative background to the coming events. It is not necessary to complete the training missions, and advanced players can skip this area.

Trials of Progress occur throughout the narrative where the player is given the opportunity to increase their military ranking. These act as narrative complication points, as a certain level of honour has to be achieved before the player can participate in a Trial by Combat in order to become Khan.

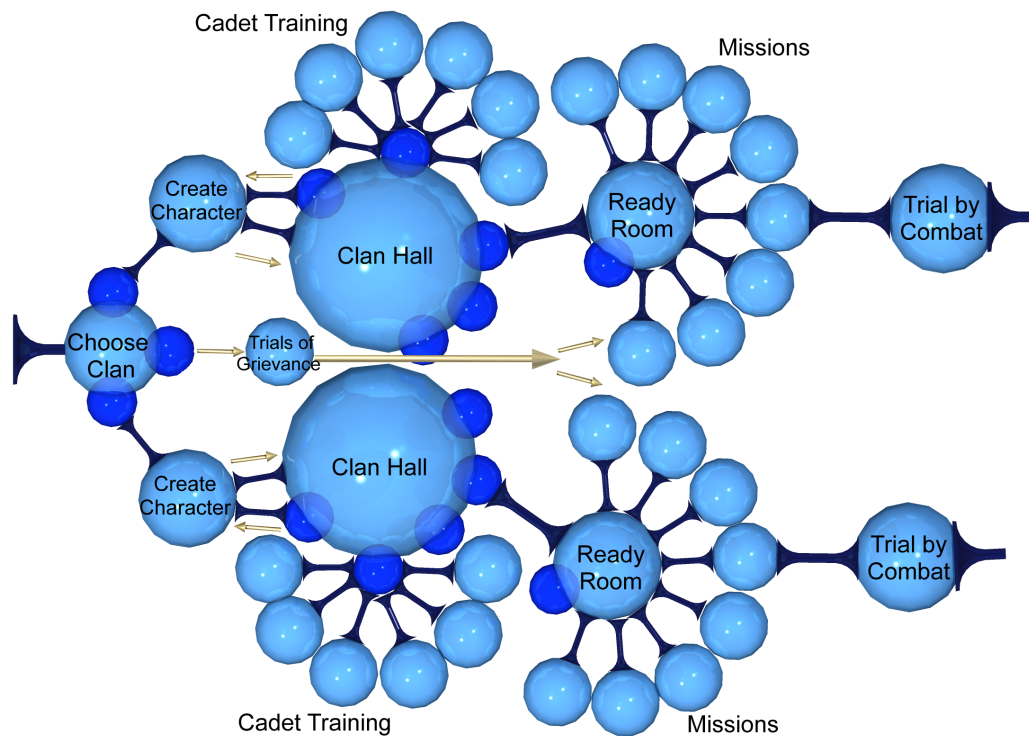


Figure 35 Scenes and events in *Mech Warrior 2*

Although Figure 35 illustrates 9 missions there are actually 16 missions for each allegiance. The missions are discreet world structures, where modeless navigation is possible. Each mission also contains any number of events, rising in difficulty and complexity as the linear structure unfolds.

The way in which the producers have created the linear story structure is quite interesting, in that they have provided a single launch point in the Ready Room, which allows the user to progress through the narrative. Each mission is sequential to the last, building in difficulty, and progressing the story. The launch point acts as a triggering event, with each complication explained in the mission briefing. Further exposition occurs at the end of each Trial, in the debriefing document, creating a complex interweaving of narrative meaning between the events that unfold in the game, and that of the greater BattleTech story. This creates the feeling that a larger universe exists outside of that which is experienced by the participant,

and the created world conceptually enlarges to embrace a broader narrative. The narrative that the player creates whilst playing *Mech Warrior 2* forms a sub-plot to that of the BattleTech story as a whole.

Summary

A good computer game is a balancing act between levels of difficulty, the evoked world and the user's sense of involvement. *Mech Warrior 2* succeeds on all of these levels. It is one of those rare games that gets the mix right, intertwining a richly detailed narrative background with a powerful games engine. One of the indicators of the success in a computer game is in imitation, and *Mech Warrior 2* has redefined the science fiction gaming genre, spawning many imitators.

Mech Warrior 2 would benefit from more attention paid to character development. Although the participant improves in skill level, and understanding of their place in the whole story, it is not clear whether they have grown or learnt anything from their experience. A game that hints at philosophy and spirituality could devote a little more time on the development of these themes, in conjunction with the "shoot-em-up" style games engine. This would act as a narrative counterpoint to the violence in the Trials of Grievance.

Aesop's The Tortoise and the Hare:

The Children's Story



Genre: Fable

Target Audience: Young children

Publisher: Living Books: A Random House/Broderbund company

Year: 1994

Medium: CD-ROM

Presentation Location: Home/School

Goal: Entertain

History

The story of *The Tortoise and the Hare* is generally agreed to have been authored by Aesop, a deformed Phrygian slave who lived around 620-560 BC. But many of his animal fables are believed to be far older, some having been found on Egyptian papyri of 800-1000 years earlier. Greek philosopher Socrates committed many of Aesop's animal fables to verse. These were in turn translated into Latin verse by Phaedrus, under the reign of Tiberius, who interspersed the stories with his own anecdotes. The fables were turned into prose around the 10th century, and formed the model for medieval fabulists. (Kirkpatrick 1992) American journalist Joel Chandler Harris, who in 1876 joined the Atlanta Constitution newspaper, communicated many of Aesop's Fables to the modern audience. He published many folk tales, which he claimed were relayed to him as a child by Negro slaves. His fictitious narrator, Uncle Remus became the archetypal "best friend" who whiled away the hours telling endless stories. (McMichael, 1989)

Narrative Devices

Aesop's The Tortoise and the Hare is a classic children's fable. Its current definition belies the fact that it was one of the works that formed the basis of the classification. Fables attempt to portray a universal truth in life, but cloak this truth within a story, usually with animals as characters. The behavioural characteristics of animals are used as a metaphor for human behaviour and hence portray recognisable human character traits.

Most fables include some sort of a moral. However, in this particular manifestation the authors have failed to emphasise "slow and steady wins the race". One presumes that this exclusion is based on the assumption that an older person will supervise the interactive environment, and will teach the moral external to the text. The aim of the story is to illustrate the moral rather than to explain it overtly.



Figure 36 The narrator

The story commences with splash screen outlining a number of choices. The user can choose a language (Spanish or English), browse the story, play, or quit. If the choice is to play, a short linear exposition sequence unfolds, introducing the narrator, a purple crow. He sits in his lounge room with a large storybook on his lap, and begins to read the story.

The crow initially uses second person extradiegetic viewpoint, addressing the player directly. This has the effect of involving the participant in the storytelling process *before* the human-computer interaction begins. Once the initial introductory sequence is completed the mode of address changes, with the viewpoint switching from second to third person. On a conceptual level, the participant's role changes from being an addressee to being a witness/user. The player is being *distanced* on one level, with third person remoteness being imposed on the narrative and *involved* on another, with the introduction of interaction. Rather than being *shown* the story the user is now expected to *explore*. Because the interface simile is the storybook, the player is in effect stepping into the pages of the book as the crow reads.

The purple crow acts as a metaphor on two levels. Being a crow, he immediately brings to mind images of a rural setting, of cornfields and scarecrows. This imagery is connoted *before* entering the story proper and foregrounds the story environment. He is not only telling the story but is *of* the story, narrator as character. On another level, the crow *is* Uncle Remus the storyteller, thus forming allegorical links to the prior art. He is friendly, comforting and non-threatening, a friend, who acts not only as narrator, but also as a character guide.

The story itself should be familiar; telling the story of the hasty Hare who is so disorganised that he loses the unlosable race, against a Tortoise. The major complication occurs when the Hare takes a nap, allowing the Tortoise to overtake and finish the race in front. The narrative climax occurs as the Hare races towards the finish line, threatening to overtake the Tortoise and steal his triumph.

The difference between the fable and most other forms of storytelling is that the theme or moral plays a dominant role. The story has been created to teach the moral, which is overt, lying on the narrative surface. Theme usually forms an undercurrent to the main discourse, binding and cohering rather than being a story's *raison d'être*.

There is a significant amount of character development in this tale. At the beginning, the Hare is arrogant and hasty. His arrogance is tempered at the conclusion by learning humility. The Tortoise (who represents the "underdog") grows in confidence, but being a gentle character, does not gloat over his opponent when he wins. The competition is a friendly one, in this version the characters shake hands and depart as friends.

The Constructed Reality

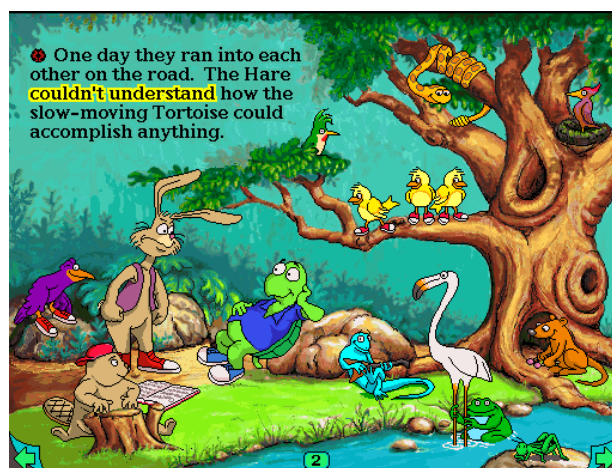


Figure 37 Bold colours and layered imagery

The design style of this CD-ROM bears a strong similarity to children's television cartoons. There is a flatness to the representation, the images are very two-dimensional. The colours are bright and bold, applied in a "poster" style. Poster painting is traditionally done by defining objects in strong black outlines and filling the resultant enclosed spaces with flat areas of colour. It was a technique common in cel animations before the advent of digital technology. The characters in the story are outlined in black,

separating them from their environment. As a result the images appear to be layered, as if a series of flat planes were built up to create the overall picture.

Many of the objects and animals in the scenes are clickable, but the interaction has the odd feeling of being on the surface of the image. The evoked world is highly *kinetic*. All action is contained within the boundaries of a storybook page. There is no ability to look around the environment, to peek past the edges. There is the distinct impression that the pages of the storybook contain all that exists within the world. The user interacts with the surface, never attaining narrative or connoted depth. There is immobility in the representation, with no panning, tilting or zooming movement of the image itself. Movement is limited to short animation sequences that either introduce each scene, or are triggered by user interaction.

Because each scene metaphorically represents a storybook page, the field of view is a wide shot, so that all of the action within the scene can take place within the static page. Because this product has been authored to play on all sizes of monitor screen, on larger screens it resides within a black frame. This, surprisingly, allows the imagery to form an even stronger allegorical link to storybooks and television cartoons. The computing environment in effect is blocked out, allowing the player to concentrate on the discourse itself, rather than the technology.

The transition between each scene is a visual edit, which works on a narrative level as well as a visual one. The edits truncate time. Events portrayed in the scenes are hours or even days apart, so there has been a definite and deliberate exclusion of non-relevant events. Time is linear, but rather than the “now-point” marching in discreet steps into the future, it does so in leaps and bounds.

Interactive Story Structure

The linear narrative structure mirrors that of traditional linear narrative, almost exactly. (See Figure 38) *Aesop's The Tortoise and the Hare* operates using a closed architecture. The plot is essentially linear, with nodes of digression forming small cul-du-sacs in the narrative. By challenging the Tortoise, the Hare creates a triggering event, which increases audience interest in the story. Each time the Hare diverts from the race, narrative tension increases. Forward movement through the story is driven by the animation sequences at the beginning and end of each scene. The linear exposition is emphasised by the crow, who enters each scene and reads the text situated on the storybook page.

Once each linear sequence is completed, the interaction begins. If an object is clickable, it animates to add detail to the main point encapsulated in the text. These animations repeat each time they are clicked which based on personal observation, children appear to enjoy. The scene interaction adds description and digression to the main plot, but does not advance the story.

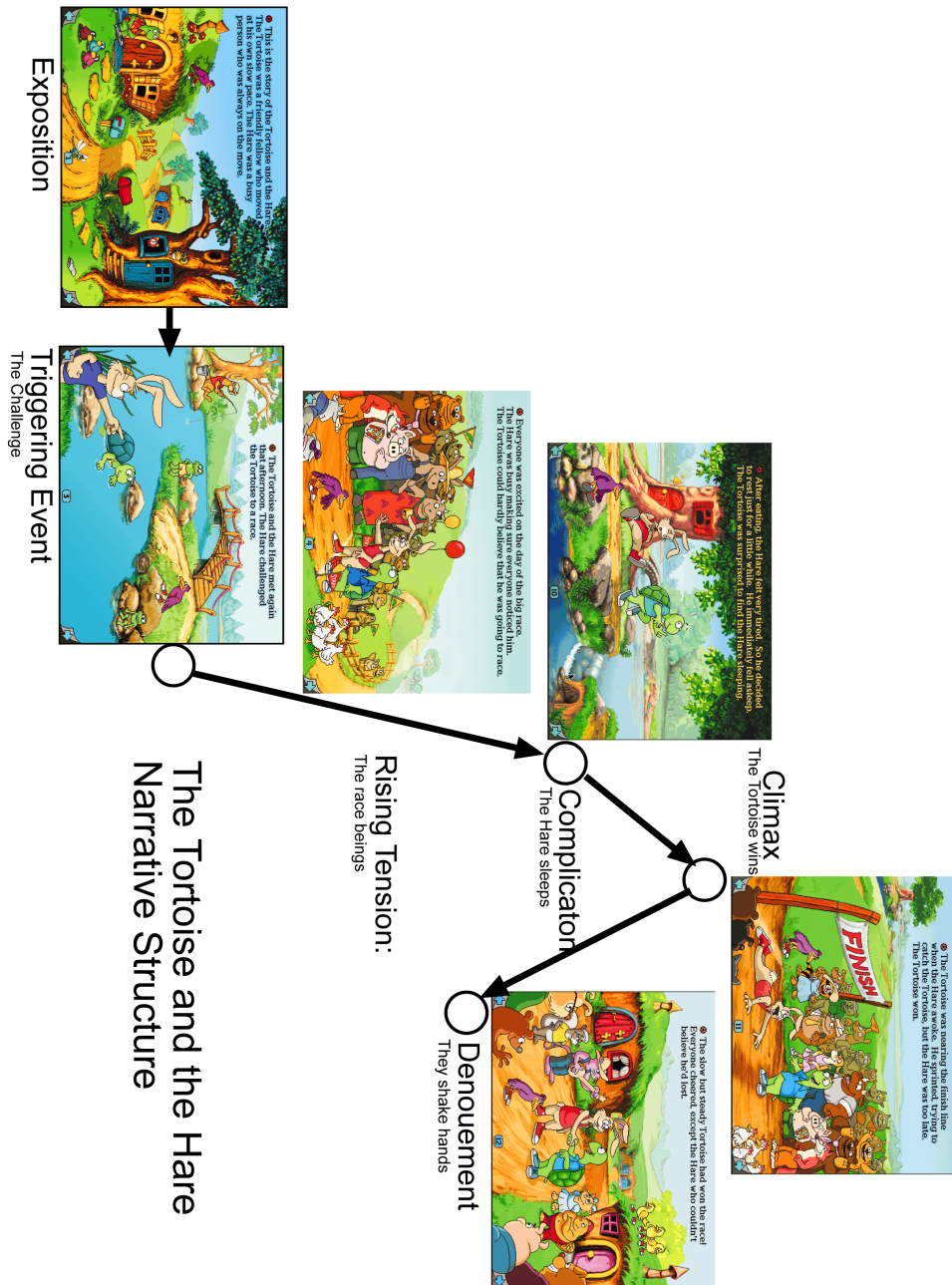


Figure 38 A classic linear structure.

The objects are not the only clickable items on the storybook page. The text is also interactive. By clicking the text, the crow reads each word. The player is able to create new sentences, and therefore new meaning from the narrative text.

The structure is a combination of linear narrative, and event nodes. Although on the main story path the progression is linear, non-linearity is introduced through the browse function. Each scene can be randomly accessed. Once a page is chosen, the only way to exit is by moving through the story.

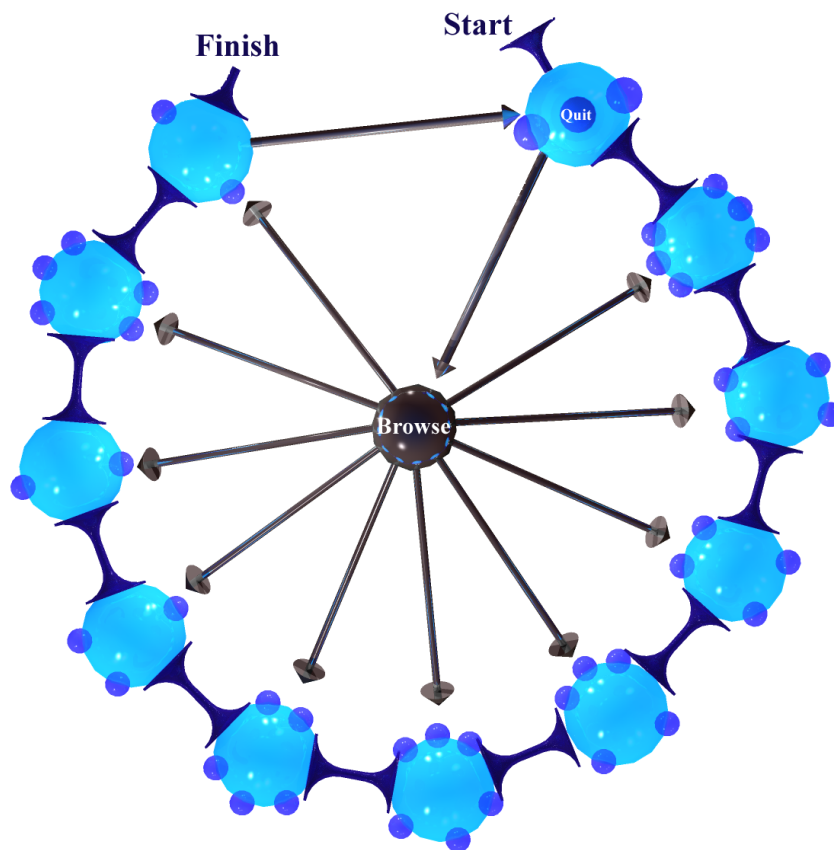


Figure 39 Scenes, events and transitions for *The Tortoise and the Hare*

But this movement does not necessarily have to be forward, the page navigation allows backtracking. But because each scene has a discreet linear beginning and ending, the scene narration is repeated on each page access, giving a peculiar forward linear movement to the backtracking. At the conclusion, the participant has the option of replaying the narrative, hence the circular structure to the model.

Summary

Aesop's The Tortoise and the Hare CD-ROM is a successful attempt to translate an existing traditional story into an interactive narrative. It employs clever use of metaphor, not only in the narrative, but in the visual representation also. It was one of the earlier Living Books titles, and contains many similarities in design style to another popular CD-ROM title, *Grandma and Me*.

The lack of cursor feedback over interactive objects increases the user's exploration of the interactive pages. Because it is unclear which objects are clickable, the player tends to click everywhere. The personification of inanimate objects makes it unclear as to which objects will animate, and which will not.

Case Studies

A possible improvement could be made in the browse function. The random access of the story can mean that exposition is lost. Short summaries of the story so far could be provided as an option, as a memory jog to unfamiliar users.

Sam and Max Hit the Road

The Detective Story



Genre: Detective Story

Target Audience: Teenagers and Adults

Publisher: LucasArts Entertainment Company

Year: 1993

Medium: CD-ROM

Presentation Location: Home

Goal: Entertain



Narrative Devices

Sam & Max Hit the Road is a detective story, drawing its influences from the classic gumshoe movies of the 1930's and 1940's. These references are unashamedly overt, the opening sequence is black and white, with up-tempo music instantly evocative of the genre. Detective stories are ideally suited to the interactive medium. In an interactive narrative, the participant is usually given a set of goals, a reason to become involved in the story. In the detective story, these goals are implicit in the genre, cases are customarily assigned to the protagonists early in the story. Accepting a case becomes the triggering event, setting the protagonist inexorably on a course of action, immersing them in the events that follow.

Although this story is more a comedy than a film noir, the authors have referred to the film noir genre, not only in the opening sequence, but also in the ability to switch the game to film noir mode (black and white)

Case Studies

when desired. This is more a gimmick than a narrative device, a parody of the film noir genre. *Sam & Max Hit the Road* in no way deals with the inevitability of a dark fate, so the reference to film noir is an acknowledgment to the prior art, rather than a theme. The recurring theme in this story is that of conservation, specifically, preservation of the Bigfoot and its environment.



The protagonists in this story are Sam, a dog in detective's clothing, and Max, a hyperkinetic rabbit. Max is the sidekick, who supports the action provided by the main character, Sam. This story's strength is in the characterisation. These two are wise cracking, sarcastic humorists, who not only parody the detective genre, but also make less than polite references to the computing industry as well. This is a well written story, with snappy dialogue and an almost symbiotic relationship between the two main characters. Character development lies in the fact that towards the end of the story the main protagonists ignore their initial mission, reacting instead to the new situation in which they find themselves. Their goals and motivations change throughout the story.

The viewpoint is consistently third person, with the two characters reacting to the user's mouse clicks, rather than the player interaction being with the environment directly. Occasionally, if the player makes a wrong move, Sam or Max will use second person address. Usually this is in the form of a smart remark or an exclamation of exasperation at the player's stupidity.

The plot is quite convoluted, but centres around the disappearance from the carnival of Bruno, the Bigfoot, and Trixie, the Giraffe Necked Girl. Bruno is the star attraction, and the owners, Siamese Twins Shep and Burl Krushman want their Bigfoot back. It appears that Trixie has fallen in love with Bruno, who, until recently was encased in a block of ice. She convinced the fireeater, Jack Flambe to free the Bigfoot, and now both have disappeared.

It is the job of Sam and Max, Freelance Police, to get the Bigfoot back. At the same time, bad guys Mr Bumpus and Lee Harvey want their own Bigfoot to star at Bumpusland, their own theme park. So the focus of the story changes from returning the Bigfoot to the Carnival, to rescuing him from the unscrupulous Mr Bumpus and Lee Harvey. Once freed, Sam is strangely reluctant to return the Bigfoot to the Carnival. Instead, Sam and Max attend a Bigfoot party, where they are given a more important mission, how to solve the mystery of the Totem poles and thereby preserve a dying species.

The various settings of this story reflect the comic nature of the game. Except when at the office, or at the roadside petrol station *Snucky's*, the narrative environments exclusively incorporate fun parks or tourist

attractions. The characters that Sam and Max encounter are stereotypes, parodies of fun park operators, movie stars and magicians. Embedded within the story are various arcade style games, such as “Whack a Rat”, “Highway Surfin’” and “Gator Golf”, the arcade metaphor forming a rhythmic motif throughout the game. Some of these arcade games advance the narrative, some are provided for pure entertainment.

Sam & Max Hit the Road only has one ending and a happy one at that, but the path to that ending is quite involved. It involves visiting a number of sites, often more than once, and selecting the correct object to use (or collect) in each environment.

The Constructed Reality



Figure 40 Comic book/Cartoon style graphics

Sam & Max Hit the Road draws its inspiration not only from cinema, but also from the Sam & Max comic books created by U.S. artist Steve Purcell, who was also involved in this production. Comic books are highly foregrounded stories, which do not deal with all-encompassing themes drawn from everyday life. *Sam & Max Hit the Road* is therefore a reasonably shallow connoted world, not only on a visual level, but also in its reflection and representation of reality. The images lack depth, or artistic perspective, the same could be said of the story.

Some of the cartoon style imagery and action is quite gruesome, but this irreverence is part of the story's charm. None of it purports to be real, the limited violence is physical humour, in the tradition of *Hanna and Barbara's The RoadRunner Show*. The televisual therefore asserts itself in the cartoon mode of representation, creating the shock of recognition in the stylised violence. The sarcastic references to plot development and complication points by the two protagonists serves to highlight and deconstruct the narrative form. Sam and Max are part of a story and make sure the user knows it.

The comedy and the cartoon style representation acts as a foil to the serious representation of the detective story. At every step the conventions and established mores of the genre are parodied. Sam and Max take

the situations fictive detectives find themselves in to extraordinary levels, with hilarious results. The result is a constant reference to the history of the detective story, and a challenge to its accepted attributes.

The visual grammar of this story is a wide shot, allowing the exploration of the various narrative environments. But there is movement within each frame, the picture is able to be panned to reveal a wider environment than that encapsulated in the 4:3 aspect ratio. Therefore, all that is revealed at first glance is not necessarily all that the environment contains.

Each story location contains a number of separate linked frames, which represent different areas within the site. Sam and Max are able to move freely within each frame, but the transitions between the frames are a series of rectangular wipes through black, which act as a truncation of time. The visual grammar does, however, contain some surprises. Occasionally there is a cut to a close up, most significantly in relation to the sno dome. The close-up emphasises the sno dome, it is a vital clue, the key to the finale. The authors therefore place significant emphasis on this particular artefact, for narrative reasons.

Perspective distortion in conjunction with the close up is also used in the introductory sequence, which effectively foregrounds the further use of close up within the body of the story. The use of perspective distortion is particularly effective in emphasising the importance of the two main characters. They are introduced in a low angle two shot, looming over the player, lit with dramatic lighting. The visual message is "here we are, don't mess with us", a classic heroic image.

Interactive Story Structure



Figure 41 Navigation map

The structure of *Sam & Max Hit the Road* fits the network model exactly. The story uses a map, which indicates areas that can currently be accessed. With the discovery of a number of objects, or clues, new sites are added to the map, so the user is able to make a choice as to which site to visit. The addition of sites to the map is linked to the acquisition of various objects by Sam. However, once a location is added to the

map, navigation between the sites is modeless. The user is able to access each site at will, which is necessary, as each site often has to be visited more than once.

Sam and Max Hit the Road is a peculiar mix of linearity and non-linearity, using an open architecture model. The authors have used a combination of linear sequences and modeless navigation to create a very controlled narrative structure. Interaction with the environment triggers short linear sequences, where authorial control is exerted over Sam and Max's actions. The interaction in this story is determined to some degree by the viewpoint. The user exerts control over the characters' actions by guiding the protagonists using a variety of interface tools. These tools are talk, use, look, walk, pickup and use Max. The player can access these tools either by clicking on the inventory box at the bottom left corner of the screen, or by right clicking their mouse button to cycle through the choices. The cursor then changes to the chosen tool. Feedback is provided to indicate if a tool is appropriate in a given situation. The cursor indicates this by changing its state whenever a tool can be employed.

Another interface device is activated when using the talk tool. If Sam talks to any of the characters on the screen, a series of options appear. He may ask a question, use the exclamation mark or ask a "duck" question, which is usually a non sequitur not related to the story at all. After asking an initial question, a number of other choices may appear, and the answers to these questions by the various characters forms much of the narrative exposition in the story.

The map of narrative tension in this game is similar to that of *MYST*, although the ability to access each area is dependent upon the collection and utilisation of objects, rather than the solving of puzzles. However *Sam & Max Hit the Road* makes more use of narrative complication, and certainly uses superior characterisation techniques. It does this at the expense of user freedom. Action is often constrained to such a degree that the sequences become quite frustrating. Sam and Max themselves soften this issue, as their witty dialogue forms much of the entertainment value in these sequences.

Each location in *Sam & Max Hit the Road* is made up of a number of interconnected image frames. The transitions within each scene are a combination of constrained linear sequences, and modeless navigation. It is worth examining in detail one of these scenes in order to understand the narrative structure the authors have constructed for each location. Figure 42 describes the Carnival. The structure contains linear sequences, indicated by the usual funnels, and transitions between frames, the arrows. Within each frame are a number of event nodes. Each individual location is structured quite differently. This scene is provided as an indication of the complexity of the interaction.

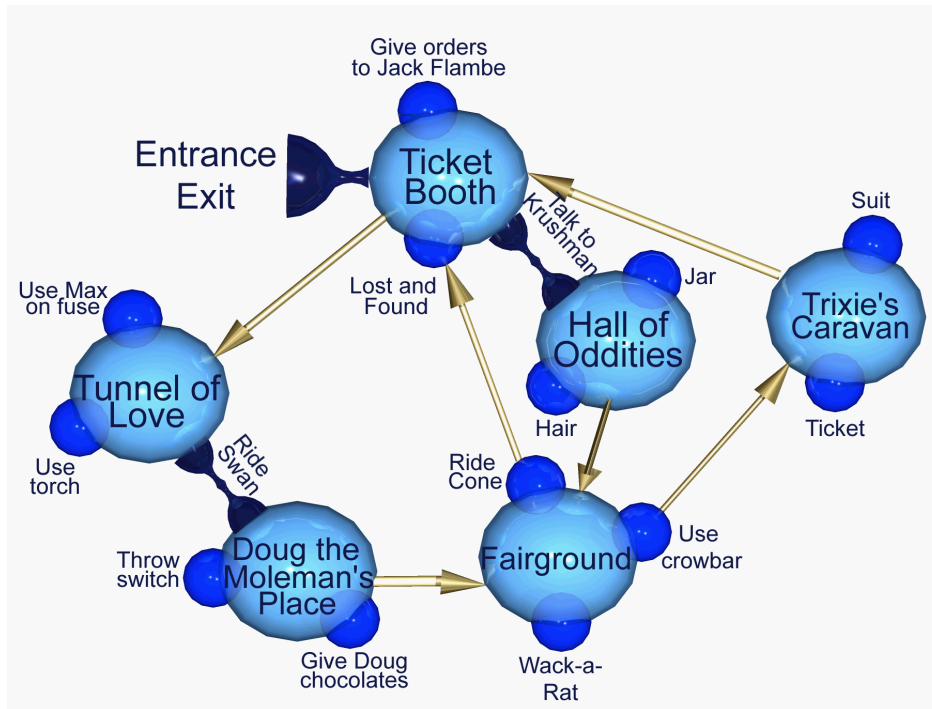


Figure 42. Scene breakdown of the Carnival showing frames, events and transitions

The central hub in *Sam & Max Hit the Road* is the map. It displays not only what environment can be accessed but provides the navigation metaphor for the game. Once travelling in the car, using the map the participant is free to move to the locations indicated. However, interaction within those environments depends on the various objects collected and how they are used.

Event nodes depicted in Figure 43 refer only to those that advance the plot. Other conversations and interactions can occur to provide added exposition and motivation for action.

Summary

Sam & Max Hit the Road is rare in the new interactive medium in that characterisation is fully developed. Although the title is essentially a spoof on the genre, it follows the established methodology of detective novels, where the task set out at the beginning is not necessarily that at the conclusion. The narrative structure is linear in the fact that access to various areas and clues is limited and dependent on the discovery of associated clues. Cause and effect is very highly linked in this story.

The constant assertion of authorial control through linear sequences limits the level of interaction, but the entertaining dialogue offsets this. The use of the second person address is also refreshing, as it not only provides clues as to the appropriate interface tool to use but is also quite confronting. As a result, *Sam & Max Hit the Road* is an entertaining and delightful title, but due to the dubious humour, is not recommended for children.

Chapter Six: Conclusion

The investigation of the interactive narrative has taken the reader into areas that have been quite diverse. Interaction design extends beyond the mere writing of a story. It involves understanding the influence of image, connoted worlds and interaction on the world view and experience of the user. It incorporates the creation of the entire design documentation enabling the user to form accurate and concise mental models of the interface and program operation. Issues such as physical interaction, phrasing and gesture, as well as the cognitive processes of memory and thinking have to be understood, and indeed incorporated in the organisation, writing and design of an interactive product.

By examining the traditional narrative devices, a full understanding of the accepted techniques and building blocks of storytelling has been developed. Although a modern construction, the examination of narrative structures draws much of its inspiration from Aristotle and his examination of the fable. His ideas on unity of action and story structure were rigorously applied to literature from the genesis of the novel, right up until the post-modern movement. Many people still define story in terms of beginning, middle and end.

It has been established that genre is one of the easiest ways to map an established story type onto the new interactive medium. By designing interactive stories with a particular genre in mind, the author overcomes unfamiliarity with the medium, attracting consumers who like a particular story type. Genre evokes an expectation of the created world before the consumer accesses the story. But it is the *scope* of the evoked world that is crucial in interactive production. Constraining the movements of the story participants and limiting the connoted space makes for a highly foregrounded or *kinetic* story, which lacks apparent depth. Few linear sequences and modeless navigation enables the user to feel part of the interactive environment, where the *discovery* of story plays more of a role than the *telling* of story. The more *ecumenical* the world, the less constrained the evoked space the more “real” the constructed environment seems.

At the same time, immersing the user in a world where they can roam freely is done at the expense of plot. Modeless navigation reduces authorial control over the story, and great care must be taken to ensure that the user discovers critical plot points. In every case examined in chapter five, this was done by the constraining of action through linear exposition sequences, or by controlling cause and effect. Certain elements of exposition and plot could not be accessed until others were revealed. Temporality was thus established in the interactive realm. It was also interesting to note that the freer the navigation, the more likely the use of nodality as a reinforcement to plot, helping to bind the story thematically through the use of imagery, motif and repetition.

Conclusion

Viewpoint in an interactive narrative is as important as that in traditional literature, but the interactivity has the effect of increasing the level of involvement, no matter what viewpoint is employed. The imposition of characterisation on the first-person viewpoint becomes merged with role-play. The participant can explore the environment as themselves, in the case of *MYST* or create their own first-person character, in the case of *Mech Warrior 2*. The user can also take on the attributes of an established personality and engage in role-play in the first person viewpoint. Second person viewpoint can be used extremely effectively in the interactive narrative, with the characters themselves able to interact directly with the consumer, creating the feeling of added involvement in the story. The use of third person viewpoint is quite interesting when used in the interactive medium. By controlling the actions of the characters, the user is essentially playing “puppetmaster” in the story. The characters can do his or her bidding, but in the case of *Sam & Max Hit the Road* may not always agree with the user’s choice.

It is in the use of characterisation that many interactive narratives show their weakness. Characters certainly interact with their environment, but authors appear to have neglected character development, where the person *changes* in philosophy, goals or outlook on life. While it is true that when using the first-person viewpoint it is difficult to impose character development on the user, the same cannot be said of the characters with whom the user interacts.

It is through setting that the mood of the story is evoked. Settings and their design styles speak in a language of cultural references to the user. Drawing from the influences of existing media, and employing the techniques of the digital era, settings define the scope, feel and evocation of the interactive environment absolutely. The setting and its method of representation in the computer medium determine how much navigation the user is allowed, and how much connoted space extends beyond the boundaries of the construction.

Surprisingly the use of metaphor is even more overt in interactive narratives than in traditional media. In titles such as *Sam & Max Hit the Road* and *Aesop’s The Tortoise and the Hare*, characters not only show the attributes of animal behaviour, but are represented *as* animals. Metaphor releases itself from the created image found in literature and emerges as direct representation.

The world that is constructed in the interactive medium does not attempt to present itself as reality, rather the involvement is in an alternative reality, often redefined, restyled and hyper-realistic. Although the monitor screen contains a two-dimensional representation of the data processing within the computer, the use of movement and interaction in conjunction with highly detailed computer modelling imagery creates the impression of a fully three-dimensional evoked space. Rather than the imagery being a projection into life space of the consumer, the user reaches through the glass frame of the screen and projects *their* influence on the narrative environment.

The use of the visual grammar is limited to linear film-like sequences, so authorial control over the *emotional* impact of the product is diluted. This is countered in many interactive games with the overuse

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of action sequences, designed to thrill on a superficial level without delivering a well-rounded *story* behind the interaction. *Mech Warrior 2* is an exception, where the action takes place within a highly detailed narrative environment. By introducing variations in shot size, camera movement, lighting conditions and by carefully controlling transitions between scenes, the interactive production team can introduce necessary variations in the interactive environment. This breaks the monotony of the ubiquitous wide shot, which, while appropriate for many forms of interaction, lacks the impact of carefully crafted cinema and television. This is more appropriate in interactive stories where a visual transition such as a “cut” provides the navigation, than those where the zoom and tracking shot are more the norm.

Control over the progression of the story is achieved by using various interactive narrative structures, such as branching, networks, parallel story lines and simulations. What has become clear in the examination of existing scripts, and in the case studies, is that all of these techniques can be used in any combination in a single title. So rather than being regarded as a template for interactive design, these structures should be viewed as elements, which can be used in combination. Without exception, exposition and major plot points in an interactive story is delivered linearly. So the interactive design should involve consideration of both the navigational aspects *and* those of linearity, making full use of the cinematic visual grammar.

What is also clear is the large amount of pre-production required when planning an interactive narrative. All of the aspects of the project have to be planned carefully before embarking on the production process. Design proposals, documentation, scripts, storyboards and user manuals all have to be approached with a clear and concise conceptual model of the functioning of the program. This has to be relayed in a way that creates an accurate mental model in the mind of the user. Story design extends to the input devices, the function of the cursor, and even the physical motion involved in the interaction.

By creating an interactive narrative, the author is orchestrating a dialogue between the user and the computer. This dialogue has to occur within an environment of mutual understanding, where actions by the user create a reaction by the computer, and vice versa. Mutual understanding is also required when creating problems for the user to solve. Solutions to problems are not always determined by logic, the context of a problem can influence the process of problem solving and return non-logical answers. So, any problem designed for an interactive narrative should be considered in context, and interactive design should avoid the use of generic problems.

By becoming involved in an interaction, participants in the interactive narrative run the risk of cognitive overload. Issues to do with memory and interaction design have been examined, with a view to lightening the user's cognitive load. The use of rehearsal should be considered in complex games designs, as should the ability to store and recall information, rather than depending on the user's memory.

Memory, cognition and metaphor all come together when examining the user interface. The limitations and advantages of interface metaphors have been discussed, with the emphasis on functionality rather than beauty. An interface metaphor, if successful, has to be established to encompass the entire process of

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interaction, helping the flow of the story, and the interaction with the constructed environment. The user's objectives have to be established before the design of a screen metaphor and mapped to a metaphor that is broad enough to encompass the program's scope. If icons are to be used as part of the metaphor, they should represent the function of the interaction, without reverting to symbolism. It has been established that symbolic language is difficult to interpret and is best avoided on a games interface. Icons create screen clutter and should be used sparingly.

Finally issues to do with information design, artistic composition and have been discussed, elements that make up the visual narrative in terms of the relationships between objects in a single image, rather than the relationships between images as was discussed in chapter two. The use of complex and highly detailed non-cluttered images imparts a higher level of meaning in the interpretation of an image. The use of colour, shape and negative space, all create an interrelationship within an image that imparts meaning, a strong visual narrative that "speaks" as loudly and coherently as does story, dialogue and motion.

Future work emerging from this research could focus on interaction and the narration of digital imagery and non-physical spaces. Developing the ideas of the televisual, as outlined by Tony Fry (1993), the relationship between the image and its projection into the world space of the user could be examined. Research could focus on how the constructed world interacts with reality by way of projecting imagery, social interaction and non-linear narrative *back* through the glass of the monitor screen and onto our perceptions and expectations of everyday life.

Exactly how the user responds to the different modes of navigation, on a visual/emotional level could be investigated with a view to modifying the existing theories on visual grammar to the new medium. In such a way authorial control over the interactive narrative would not have to rely on linearity, a new language, an 'interactive grammar' could be established. Emotional content in the interactive medium would then be able to mature.

Prospective research could also focus on the narration of virtual space, the telling of environment. This could include not only two-dimensional representation, but also three-dimensional rendered imagery, interactive VRML, digital animation and written spaces such as MUDS and MOOs. Each designed environment imparts as much narrative through the design style, intent, era and mood, but does so by evoking space. What information virtual space imparts, and how it fundamentally differs from actual space could be valuable in interactive design, enabling producers of the interactive narrative to create even more involving connoted worlds.

A final research area could focus on creating an overall template or model for conceptualising the interactive narrative. This could be an extension of the three-dimensional models of narrative structure contained within this dissertation. Computing environments and interaction design could be conceptualised in terms of the event node/scene structure, simplifying the preliminary organisation of the interaction and aiding the organisation of complex story lines. This necessarily involves an event/space model where actions are defined in terms of location, rather than temporality.

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Figure 15 *Act One Flowchart* in Steve Connard (1994) *Design Proposal: Meetings with Luminous Dogs* by kind permission of the author. Sydney, Australia

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Appendix

Example Scene

"MEETINGS WITH LUMINOUS DOGS"

EXAMPLE SCENE

Doc: egscene.doc 23/4/96

Written by
Steve Connard

Terminology

"Action Mode"

3rd person point of view where players observe the characters and is written in normal type.

"Browse Mode"

1st person point of view where players become the main character (or his alter ego) and control his action. This is written in italics.

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A door, hanging off its hinges, bangs in the wind. Billy notices some huge stone heads amongst the crumbling ruins.

BILLY

Cripes, look at that!

SOULA

(Anxious)

I don't like it here....

Some invisible airborne creature whooshes passed.

SOULA

Did you hear that....something flew passed me.

BILLY

You're imagining things!

JEKKER (OS)

You'd better be careful!

Billy and Soula turn around to Jekker- a very strange creature with a human head, no legs or body- only arms that it walks on.

SOULA

(Quietly)

What is it?

BILLY

(Cautious)

Dunno maybe some deform... but it looks harmless.

JEKKER

This place is no place for tourists.

BILLY

Listen up you freak... we are not tourists.

JEKKER

Oh ... this one doesn't want to listen either... .. Oh well, I tried... But keep away from princess over there.

Jekker points to Jamma on top of a cluster of boulders. Jamma gazes at them as she files her nails.

Billy and Soula arrive at the ruin. Wind moans through the tired walls. Nearby is a collapsed well and a rusty bucket next to an old oven.

Jekker scampers off.

JEKKER

Good luck... you're gonna need it.

Soula watches him disappear.

SOULA

Wait! Have you see our friends?

BILLY

What a freak!

SOULA

Maybe he could have helped us find the bus...Shall we talk to that creepy woman again?

Menu Choice : Yes or No

Billy gazes at Jamma who is still looking at them.

BILLY

Dunno, she's a weird one.

Go to Sc 3.1 or Sc4

Sc 3.1 OUTSIDE RUIN

Billy and Soula walk away from the Ruin towards Jamma.

The door stops banging. The sound of the moaning wind stops. There is a RIPPING SOUND and the door starts to pull itself out of the wall. It flies up into the air, hovers for a moment then flies after them.

Sc 3.2 TRACK TO BOULDERS

Billy and Soula walk towards Jamma. The door follows- gliding silently through the air. We see it had a eye that watches them.

Sc 3.3 BOULDERS

Billy and Soula approach Jamma, who grins in a most unsettling manner.

JAMMA

Hello ... boy.

Billy ignores her taunt.

SOULA

Have you seen our friends around here... or the school bus.

JAMMA

The only friends I have are my children. Would like to meet them.

SOULA

What shall we do? Shall we go with her.

Choice: Yes or No

BILLY

Dunno... she ain't playing straight...

Branch to Sc XX (not scripted for Demo) or Sc 3.4

Sc 3.4 BOULDERS NEAR RUIN

BILLY

No thanks... we got stuff to do.

JAMMA

Suit yourself, Billy boy.

Jamma smiles and leaves, laughing.

BILLY

How come she knows my name ?

Suddenly the door swoops down on them. It now has arms and quickly opens and closes itself with its hands- making a loud banging noise.

Billy looks up at the apparition.

Sc 3.5 Browse Mode

Cut to Billy's POV of Door Spirit hovering in the air.

BILLY (OS)

Cripes, what's that!

SOULA (OS)

*That's one of those spirit things.
Quick, try one of the old man's
weapons..*

*A MENU OF WEAPONS IMMEDIATELY APPEARS AT THE BOTTOM OF
THE SCREEN- BOOMERANG, WAILER, BULLROARER, RATTLE.*

Sc 3.5.1

Condition: If players choose the Bullroarer.

*Billy's POV (we see his arm and hand from his POV) The bullroarer is
whirling in Billy's hand, making a loud buzzing noise. But in the
background the Door Spirit still approaches.*

BILLY (OS)

It's not working!

SOULA (OS)

Billy... Choose another!

Sc 3.5.2 (If players select the Click Sticks)

*The Click Sticks appear in Billy's hand. (We see his arm and hand from
his POV). Billy taps them together, but the Door Spirits still approaches.*

SOULA (OS)

Billy... Choose another!

Go to Sc 3.5.3, 3.5.4 or 3.5.5

Sc 3.5.3(If Players select the Wailer)

*The Wailer appears in Billy's hand. (We see his arm and hand from his
POV). Billy whirls the Wailer, but the Door Spirits still approaches.*

SOULA (OS)

Billy... quick, choose another!

Go to Sc 3.5.2, 3.5.3 or 3.5.5

Sc 3.5.4 If players select the Rattle.

*The Rattle appear in Billy's hand. (We see his arm and hand from his
POV). Billy shakes the rattle. The Door Spirit goes crazy, darting around
and eventually crashes into the boulder.*

Condition

If players do not choose a weapon within 3 secs

Or

If players choose the Bullroarer, Click Sticks and Wailer (Sc 3.5.1, Sc 3.5.2 and Sc 3.5.3 all play),

go to 5.6

otherwise go to Sc 6

SC 4 OUTSIDE RUIN

BILLY

She's too weird for me..... I'm gonna
look around.

SC 5 BROWSE OUTSIDE RUIN

Condition: After 3 Clues have been found, Go to Sc 6

The camera cuts to 1st person POV and the cursor appears. As players browse the environment, the cursor changes to an arrow indicating the directions available.

BILLY (OS)

*I don't understand it. One minute the
bus is wheelin' down the road... and
the next minute it's dust.*

Go to Sc 5.1, 5.2, 5.3, 5.4 or 5.5 or

If players continue to browse .

BILLY(OS)

*Teach and that Driver looked like they
were tripping right out.*

***Go to Sc 5.1, 5.2, 5.3, 5.4 or 5.5 or
Continue to browse.***

If players continue to browse.

BILLY (OS)

*I wonder what they saw at the Crater
that freaked them so stupid.*

Condition:

If players have not found a clue after 9 seconds go to Sc 5.1

Sc 5.1 Brake fluid on ground outside Ruin (Clue type 1a)

Cut to Action Mode (3rd person POV).

Soula is looking down at the ground at something.

SOULA

Billy, look at this!

Cut to ECU of the drops on the ground. Billy is standing next to Soula peering down at the ground.

BILLY

It's brake fluid! Maybe the bus' brakes were leaking!

SOULA

Maybe they had an accident.

BILLY

But what's the bus doing here.... lets' see what else we can find.

Billy looks around the Intersection.

Cut to Browse Mode

BILLY (OS)

Cripes... I hope Tania is OK!

Go to 1 of 5 remaining Clues or continue to Browse. If players continue to Browse.

BILLY (OS)

Wish I was stuck out her with her, instead if this book worm.

Go to 1 of 5 remaining Clues or continue to Browse. If players continue to Browse.

BILLY (OS)

I wonder how Paul is going.

Condition:

If players have not found a clue within 8 seconds go to Sc 5.2

Sc 5.2 Child's toy (clue type 3)

Cut to Action Mode

Soula is scrutinizing the ground.

SOULA

Look at this.... it's an old toy... It's middle eastern.... Certainly not one of ours.

SOULA

So, maybe some other kids have disappeared here.

BILLY

Don't be daft....Let's keep lookin'...

Cut to Browse Mode

BILLY (OS)

*What I can't figure are these locals-
that old guy and the tricky woman-*

Go to 1 of 4 remaining Clues or continue to Browse. If players continue to Browse.

BILLY (OS)

*They ain't playing with a full deck...
none of them.*

Condition:

If players have not found a clue within 8 seconds go to Sc 5.3

Sc 5.3 Watch on ground outside Ruin

Cut to Action Mode.

Soula scrutinizes the ground.

SOULA

Billy....a watch !

Billy picks it the watch and inspects it.

10

BILLY

Nobody leaves their watch behind.
It's stopped.

Billy looks at his own watch. Soula looks at hers.

SOULA

So has mine.

BILLY

Mine too!

They look at each other.

SOULA

Maybe time has stopped.

BILLY

Stop talking bullshit! Let's see
what else there is here.

Billy looks around.

After 3 scenes played , go to Sc 6

Cut to Browse Mode (1st person POV)

BILLY

*Why does all this crap happen to
me.... I didn't want to come on this
trip anyway.*

***Go to 1 of 3 remaining Clues or continue to Browse. If players continue
to Browse***

BILLY

*I wonder where those kids are. They
gotta be somewhere around here.*

Conditions:

If players have not found a clue within 8 seconds go to Sc 5.4

After 3 scenes played , go to Sc 6

Sc 5.4 Well (Clue type 3)

Cut to Action Mode

Soula is peering into the well

SOULA

Billy listen to this. I can hear
whispering, someone is in there

Billy joins Soula and peers into the well. We see his POV of the black
hole.

TANIA'S VOICE

Soula... be careful.... don't come any
closer to ... get away from the
Ruin....

BILLY

She must be stuck in there. But I
can't see her. Let's look in the Ruin.

JEKKER

You'll be sorry.....

Billy sees Jekker squatting nearby, watching him. Billy enters the Ruin.

Go to Sc 8

Sc 5.6

(Action Mode.)

The door catches Billy's arm and lifts him off the ground. The door,
laughing hysterically, takes Billy across the desert to a door-less room in
the Ruin and drops him down on the floor. Billy gets up and looks
around.

Go to Sc 9

Sc 6 OUTSIDE RUIN

Action mode

BILLY

Let's look inside the ruin here.

Quark is sitting on top of a wall.

BILLY

That crazy bird creature is back again.

QUARK

What are you going to screw up now?

Go to Sc 8

Sc 8 INSIDE RUIN- FIRST ROOM

Action mode

Billy walks inside the ruin. The moaning of the wind suddenly stops. A breathing sound can now be heard. There is a fireplace which is still smoldering. Billy sees a small lizard watching. He glares at it.

BILLY

There is something funny about those lizards.

Billy makes a hissing sound at the creature- the lizard advances.

SOULA

Leave it alone.

BILLY

Yes miss teacher..... I'm going to have a look around!

Sc 8a

Browse Mode

Go to Sc 8.1, 8.2 or 8.3

Sc 8.1 Fireplace

If Billy approaches the fireplace we hear an odd breathing.

BILLY (OS)

This chimney... It's making a strange sound.

Suddenly fire breaks out and Billy jumps back. The fire quickly gets bigger, filling the room.

Cut to Action Mode

Billy jumps through the flames.

BILLY

Soula, get out of there... Soula...

SOULA

I can't it's too strong.

BILLY

Shit... what do I do?

Billy looks around the room.

BILLY

I gotta get some water.

JEKKER

Open your eyes kid....there's a bucket
and water outside....but you'd better
hurry.

Jekker whistles to the bucket. The bucket flies through the air across to the well and disappears inside. Billy runs after it. The old mechanism on the well winds and the bucket appears full of water. It flies across into the ruin and tosses the water onto the fire. The fire instantly vanishes. Soula is huddling in a corner. Billy enters the room.

BILLY

You OK?

SOULA

Sure...

BILLY

Some bucket that.

Billy walks into the other room. Something pushes him and he stumbles.

Go to Sc 9

Condition:

If players have not found a clue after 9 seconds go to Sc 8.3.1

Sc 8.2 Lizard in Ruin

BILLY (OS)

This lizard sounds like it's laughing.

CU lizard. Suddenly the Lizard grows huge and flies up at us- laughing as its bares its sharp teeth It's head it like that of Jamma's.

BILLY (OS)

Watch out!

Then the lizard shrinks back into its previous form.

Cut to Action Mode

They both are staring at the lizard.

SOULA

Did you see that?

Billy sees the other door.

BILLY

This getting weirder. I wonder what's
in here.

Go to Sc 8.2.1

Sc 8.2.1 RHS Room

TANIA (OS)

Billy, this way!

Billy looks around the room but there is no-one there.

BILLY

That sounds like the Tania!

SOULA

Billy, be careful it could be trap.

Billy looks around again and now sees that there is no door out of the
room. The opening has vanished.

BILLY

Shit, where's the door gone. How do
I get outta here?

Laughing can be heard.

TANIA (OS)

Billy, where are you!

Something pushes him. He stumbles to the ground.

Go to Sc 9

SC 8.3 ANOTHER (LHS) ROOM

In the middle of the room is a tree. It is covered in red nuts.

BILLY (OS)

Beetlenuts! The old woman from the car park must get her beetle-nuts here

Cut to Action Mode

Soula inspects the tree.

SOULA

I don't think so- they don't have them here.

Billy picks a nut and eats it.

SOULA

Don't be stupid, you don't know what they are.

Billy starts to walk out then suddenly drops to his knees. We see his POV.

The ruin walls bend. The tree becomes luminescent.

Tania walks through a wall and stands in front of Billy. Billy sees she has mirrors in her eyes. She takes off her blouse. Then he hears a buzzing noise.

A huge wasp appears, hovering above the ground- its face an old man's. The wasp explodes.

Go to Sc 10

Sc 9 INSIDE RUIN

Billy staggers to his feet. He hears laughing behind him and sees Jamma, taller than ever- perhaps 10 feet, peering down over the walls, looking into the ruin. She has a snake in her hand.

JAMMA

Hello boy... have you come to play in Jamma's garden of Eden.

Billy just stares at the towering figure.

JAMMA

Well play with this.

Jamma drops the snake into the room, next to Billy. The snake slithers towards him and as it gets closer, it opens its mouth- its fangs glistening. The mouth grows in size and until it's huge. The snake's head lunges at Billy. He sees the mouth surround him and everything goes black.

Go to Sc 11

Sc 10 ENDLESS PLAINS

Billy is standing on a surreal plane - the Endless Plains. A man approaches walking on the air. Bright fibers stream from out his stomach area. The fibers glow red hot.

There is a fire.

He is now standing somewhere else on the Endless Plains looking at the fire. The Students are standing there, watching them. The image shatters and everything goes black.

Go to Sc 11

Sc 11. OUTSIDE RUIN

Billy is lying unconscious outside the Ruin. Soula is kneeling over him. He opens his eyes. He staggers to his feet.

BILLY

Shit, what happened?

They see Jamma laughing, watching him from some distance away.

SOULA

What do we do next?

BILLY

I don't know.

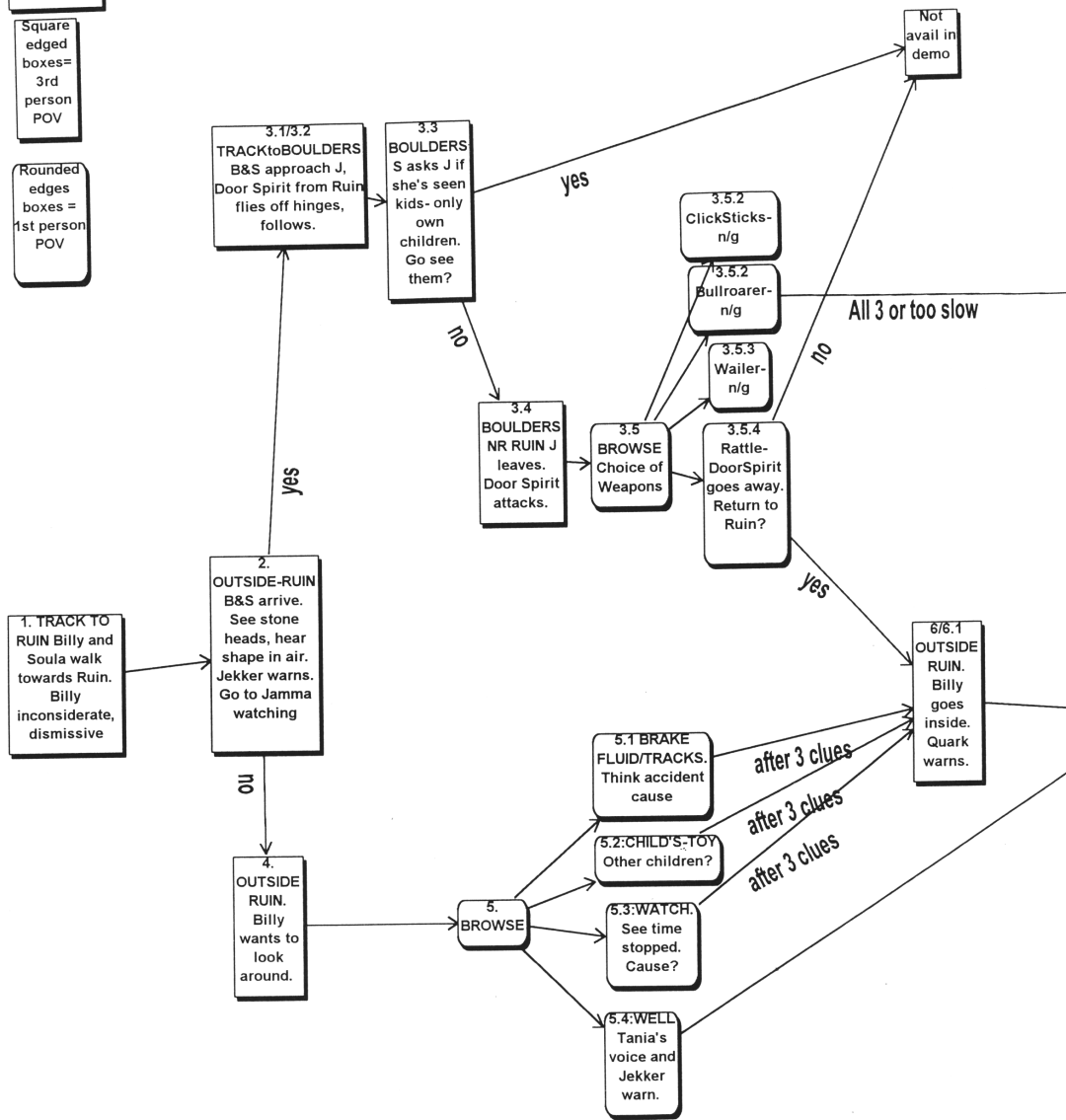
He looks around, anxious.

Appendix

EXAMPLE SCENE FOR PROTOTYPE Egscene2 24/4/97

Square edged boxes = 3rd person POV

Rounded edges boxes = 1st person POV



Appendix

