

Constructing the Concept of the "Interactive 3D Documentary" - Film, Drama, Narrative or Simulation?¹

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Introduction

This article aims at establishing a new genre concept, the "interactive 3-dimensional documentary" - as opposed to analysing and implementing a pre-existing genre concept.

The work reported is part of a project on (script) writing for interactive works that communicate factual information to the user of the work. The objective of this project is to systematize existing guidelines and established practices of script writing in order to optimize the production process, seeing the script as a tool for planning and coordinating the work of a production team consisting of persons with a wide variety of skills and talents and a variety of educational and experiential backgrounds.

The term "interactive 3D documentary" was adopted from the very beginning of the project, but all along the need for a more precise definition (or construction) of the implied concept was recognized. This is a concern that at the present time one will meet in connection with most other emerging genres in the "new media".

A typical approach is to regard an interactive work as a variety of some well-established genre. And the corollary for script writing is to adopt the formats and conventions of scripts for that model genre. One such approach is to regard interactive works as varieties of "film narratives" and so to see the script writing in terms of "screen writing" - writing for the film screen or television screen. This approach is adopted in several influential handbooks on writing for interactive media, such as Jon Samsel & Darryl Wimberley: *The Interactive Writer's Handbook* (1996) and its sequel *Writing for Interactive Media. The Complete Guide* (1998), Timothy Garrand: *Writing for Multimedia. Entertainment. Education. Training. Advertising. World Wide Web* (1997) and Michael D. Korolenko: *Writing for Multimedia. A Guide and Sourcebook for the Digital Writer* (1997). These books draw heavily on examples from the multimedia industry, demonstrating that this is not only a textbook approach, but reflects actual practices in the industry.

¹) Preprint. To be published in Lars Quortrup (ed.): *Virtual Interaction. Interaction in Virtual Inhabited 3D Worlds*. Springer.London. 2000.

In this framework an interactive work concerned with factual information has then to be conceptualized as a variety of "documentary", following the dichotomy of "fiction film" and "documentary film". The prime examples of "interactive fictions" or "interactive narratives" (the equivalents of "fiction films") are normally taken to be computer games, typically of the Adventure type, but other possibilities are discussed in the literature e.g. in Espen Aarseth's *Cybertext. Perspectives on Ergodic Literature* (1997).

The film, television or videogame documentary is by now a well established genre, although dynamic and still developing. Discussions of script writing for this rely on many years of practice and teaching. But interactive documentaries (whether 2D or 3D) cannot to the same extent take genre conventions and practices for granted. Actual examples of the genre are relatively few, but we have found at least one company that has marketed factual interactive works as 'interactive documentaries'. In the manual of FlagTower's *The Unexplained* (1996) it says: "FlagTower has named this concept the Interactive Documentary, a title which reflects the televisual appeal of our style of production". But other works of course exemplify the same basic idea without actually adopting the term.

Attempts at theoretical characterization and systematization are almost non-existent, since interactive fictions have drawn the most attention.

A constructive clarification of the term 'interactive 3D documentary' will have to address several problems, typified by the three terms: 'interactive', '3-dimensional' and 'documentary'.

This article then takes its point of departure in a discussion of salient features of the documentary film, in order to investigate to what extent it is feasible and valuable to transform concepts, devices, tools and modes of expression and representation from (documentary) film production to interactive works, and to what extent these new types of works calls for new concepts. We then proceed to discuss interactivity and the complexities introduced by 3-dimensional representations as opposed to the 2-dimensional representations of space normally used in film.

Film and Theatre as Interface Metaphors

Brenda Laurel in *Computers as Theatre* (1991, 1993) proposed drama, understood as theatrical productions, as a general model or "metaphor" for computer interface design. This puts the user in the double role as spectator and director of the "play" unfolding on the screen and other output devices. The screen etc. is conceptualized as a stage with actors, props and scenery, and the idea is to focus on the action unfolding rather than on "static" displays of information.

It should be stressed that Brenda Laurel is not proposing to use the theatre as an "interface metaphor" in the normal sense of this term. This would

mean actually dressing the screen up as a stage with actions represented by actors and props, and perhaps even representing the director and his tools directly in the interface. She mentions Ellis Horowitz's *ScriptWriter* system from 1987-88 as an actual example of the use of a theatrical interface metaphor. Multimedia designers of today will be familiar with MacroMedia *Director* where the interface is built on a film director metaphor. Laurel underlines the "distinction between using the theatre as an interface metaphor and using it in the deeper way that this book advocates - as a fundamental understanding of what is going on in human-computer interaction." (Laurel 1993 : 19)

This statement by Brenda Laurel seems a natural stepping stone for a short explanation of the use of film as a model for understanding interactive 3D documentaries in the present article. The aim is neither another interface metaphor (like the one used in *Director*) nor a conceptual model for human-computer interaction as proposed by Brenda Laurel. Both the writers on interactive media referred to above and the present article see the film as a model in a fairly literal sense: Events and actions represented by moving images and sound, and projected onto the computer screen as a medium of display. Since a computer is used, some sort of interface will have to be provided for human-computer interaction. This may employ a film metaphor, thus underlining the film-like nature of the work. But all sorts of other metaphors and interaction devices are feasible as demonstrated by scores of computer games and multimedia presentations.

The Interactive 3D Documentary as Film

The core of an interactive 3D documentary is like the film an interrelated sequence of moving images projected on a screen and giving the user/spectator a view of a world including agents, "props" and scenery, organised in one or more locations. In the present article we concentrate on works that use a single computer screen for projection, not taking what has become known as 'Virtual Reality' into account. The reason for this is that while there are many similarities, some of the differences are crucial and entail a different approach both in production and in analysis and evaluation of the final results.

With a computer screen the viewport to the represented world is an image cropped off at the edges of the screen, not a direct view of the scene as in normal space. The viewport cuts off large parts of the world as well as giving access to selected parts of it. As with film this creates the possibility of an illusion of a partial view of space extending in all directions, to both sides, above, below and behind position of the spectator, who is both "in the world" and outside it. The part of the world that the spectator has access to through the viewport of the image, has to be worked out in such detail as is needed according to the purpose, style and technique of the work, but everything outside the view is filled in by the imagination of the spectator, and can be left without details or even not worked out at all.

In typical documentary films of course the assumption is that the world in front of the camera is real and actually extends in all directions, but still it is acknowledged that a specific selection of viewpoint, the images created and the way that sequences of images are edited together, may create illusions or distortions out of "authentic" footage. This may result in works that are experienced as "false" as well works that are experienced as "true" representations of the depicted world. The photographic registration of what is in front of the camera does not automatically guarantee "true" representations. In the literature one will find many demonstrations of the fact that something just outside the viewport of the camera might have changed the impression created by the film considerably if it had been included rather than - consciously or unconsciously - left out.

The images produced with the film camera may vary: close-ups, medium shots and long shots, panoramic views and interiors, panning, tilting, moving with the actors, employing various types of perspective: frog's view, bird's view, personal point-of-view; partially blurred images, clearly focused images, images with natural light or carefully contrived artificial light; colours enhanced or distorted by "filters" etc.

In film this is created with the use of a photographic film camera that intervenes between the spectator and the depicted world. In interactive 3D presentations no physical camera is needed, but it is fruitful to conceptualize the device generating and projecting the images of the 3-dimensional world as a kind of "virtual" camera. This device could render whatever is supposed to be in front of it in a very unsophisticated way, typically using a mathematically constructed "central perspective" as "seen" from a specified point in the virtual space of the depicted world.

But the idea of a 'virtual camera' effortlessly leads to reflections on the 'creative' role of the physical camera in film, as suggested above. And this again generates ideas about possible alternative designs of the 'virtual camera' and the restrictions and possibilities any specific design will impose on the 'director' of an interactive 3D documentary. The virtual camera should typically be capable of doing what a physical camera can do, as well as something more; a camera that is enhanced as well as virtual. But in some cases one might want to impose restrictions rather than enhancements, depending on the overall design of the planned interactive work.

The film camera, virtual and otherwise, creates the possibility of a whole range of pictorial representations that are specific to film, and makes theatrical space and film space two fundamentally different phenomena, in spite of all their obvious similarities. These pictorial representations are found as well in the animated film, even though the "world" in front of the camera is drawn, painted or modelled rather than "real". Fact films (documentaries in a broad sense) created with animation techniques are of course not relying on "photographic documentation", but on the statements created with words, moving images and sound being in accordance with the reality as the creators conceive it.

For obvious reasons the world in front of the virtual camera of an interactive 3D documentary is not the real world or a carefully selected part of it. The 3D world is represented in or generated by the computer and displayed on the computer screen using the virtual camera. The closest relative in the film world is actually the animated film, where painted pictures or models are used to represent the world, but historical re-creations and drama documentaries in the same sense aim at displaying images that make true statements about the real world, but without any of the normal "authenticity" of a photographic documentation.

Since our concept of the documentary film is closely associated with this type of photographic documentation some "deconstruction" of the concept of the 'documentary' is in order. But first we will try to exemplify what we mean by an 'interactive 3D documentary'.

An illustrative case: Life and Death in the Danish Bronze Age.

In order to do this we will introduce a specific example which is only in the planning stage, but will be worked out in more detail at a later stage of our script writing project. This was partly inspired by a documentary film produced by the Danish National Museum in the fifties and involves among other things the re-creation of some famous Danish Bronze Age burials.

Another inspiration was the exhibition *Gods and Heroes of the Bronze Age. Europe at the Time of Ulysses*, a European collaboration shown first at the Danish National Museum in 1998.

In 1921 a burial mound in Egtved was excavated; the burial site held among other things a big coffin made out of a hollowed-out oak trunk, 2 metres long. In the coffin were the remnants of a young woman ("the Egtved girl") complete with skin, hair and teeth, as well as well preserved clothes and jewellery. The modern excavation methods used made a very detailed analysis of the burial possible. The burial was dated to about 1400 BC.

An excavation in 1935 at Skrydstrup disclosed another burial of a young woman in an oak coffin. This together with earlier excavations of burial mounds, mainly of men, has given us a substantial amount of knowledge about Bronze Age burials. The burials are some of our most important sources to this period of Danish prehistory, but other archeological findings have disclosed weapons, artefacts used for ceremonial purposes, symbols carved in stone, remnants of buildings etc. Earth samples with among other things seeds, and other botanical, zoological and geological indicators, give a very good picture of the climate, landscape, domestic animals and wildlife of the time. The Bronze Age is the period between 1800 and 500 BC in Denmark and the other Scandinavian countries.

The excavations inspired the National Museum to commission in 1958 a documentary film to illustrate how the researchers had reconstructed life in the Bronze Age using the Egtved and Skrydstrup burials as the main focus.

Other well known objects from the same period, such as the ceremonial bronze horns known as 'lur' in Danish, were included in the reconstruction. For the location of the film a landscape similar to the one thought to exist in Denmark in 1400 BC was used. The actors were dressed in the type of clothes found in the coffins and used the jewellery, weapons and other utensils known from the burials and other archeological findings. Everything was done to implement the knowledge about the period available to the researchers, but of course the movements and gestures of the actors, as well as the actual ceremonies depicted in the film were based on conjecture.

The basic idea was to help the spectator visualize life in the Bronze Age in Denmark, and to create a possible context for the artefacts and other objects that had survived. This was done through discursive presentations, combining spoken commentaries with photographic descriptions, as well as dramatized sequences, for instance one covering the time span from the death of a young man to his burial in an oak coffin and the erection of the mound.

Three other devices used by museums and heritage sites to illustrate life in former times should be mentioned in this context. The first is the use of scale models to illustrate how a bit of landscape or a specific village or town might have appeared at the time. This normally allows the visitor a bird's eye perspective of the area, such mirrors may be used to give a more horizontal perspective from different angles. The second is the use of dioramas in full scale to show a group of people in some sort of (social) action, with dummies dressed in reconstructions of clothes etc. And the third is reconstructions in full scale of buildings and their environments. This may even be peopled by 'actors' dressed in reconstructed clothes and enacting daily life and ceremonies etc. Depending on the set-up the visitor may be allowed to interact with the players to get more information about the time and our present knowledge of the time.

An interactive multimedia documentary would use one or more of these devices, cinematographic reconstructions, virtual models and buildings and landscapes, virtual dioramas and images of actual artefacts, allowing the user to explore a segment of the Bronze Age world, investigating the artefacts of the time, observing the people of the age go about their business, in this case focussed on the burial of an important member (or the off-spring of an important member) of the society.

The user might be placed in the role of an unobserved observer, moving around at will, or a participant observer, an outsider, interacting with the people in the rendered world to elicit information. The user might even play the role of a specific person in that world, directly influencing the flow of the "story" by his or her actions.

The equivalents of discursive presentations could of course be included in the work as a whole, in the form of written or spoken text, supported by

illustrations in all relevant media: Graphics, photographs and film strips, 3D representations of artefacts, sound and music.

The designer of this multimedia work would have a choice of still pictures (graphics and photographs), animated 2D graphics, video sequences with live action-actors, or animated 3D graphics. Of course only the use of 3D graphics would make the work an "interactive 3D documentary", in part or as a whole.

Other possible modes of expression for such a simulation has been demonstrated in the viking age multimedia installation in Ribe, Denmark (Laursen 1997a and 1997b, Laursen and Bøgh Andersen 1993).

We will now return to our discussion of the concept of 'documentary'.

The Concept of 'Documentary'

The term 'documentary' is in general associated with film and television documentaries, but actually has a wider use as illustrated by this extract from *Webster's Third New International Dictionary* (1961 edition):

1. **documentary** [...] 1: being or consisting of documents : contained or certified in writing <~ evidence> 2: of, relating to, or employing documentation in literature or art <~ annotations> <a careful ~ writer> *broadly* : having or claiming the objective quality, authority or force of documentation in the representation of a scene, place or condition of life or of a social or political problem or cause : FACTUAL, OBJECTIVE, REPRESENTATIONAL - used of literature, the theatre, art, photography, radio and TV programs.
2. **documentary** [...] a documentary presentation (as a film or novel).
(*Webster's* 1961 : 666)

This dictionary entry underlines the relation between some aspects of reality and the documentary work: the intention of a faithful or "true" representation of those aspects of reality, using actual "documents" or other means. With documentary films or television programs that relationship has both conceptually and practically been integrated with the use of photographic images and sound recording for the registration of selected parts of the reality to be represented.

This of course has everything to do with the very nature of the photographic image and sound recording, but it has just as much to do with what is put in front of the camera and the tape recorder (or whatever). Fiction film uses exactly the same equipment to register scenery and playacting carefully organized in order to create the illusion of events and actions unfolding in front of the camera (and so in front of the spectator).

Erik Barnouw in his *Documentary. A History of the Non-fiction Film* (1974) tells how film from the very beginning developed into two types of popular entertainment: One openly fictional - photo plays - and one claiming to be factual: War reports, travelogues, shots of famous people and royalty, etc. And also how various forms of "fakes" very soon entered the fact films, sometimes under the name of "reconstitutions":

Reconstitutions and fakes have an impressive record of 'success.' Memorable genuine footage came back from the 1906 San Francisco earthquake, but other footage of the event, contrived in table-top miniature, was equally applauded. Several volcanic eruptions were triumphantly faked, as in Biograph's 1905 *Eruption of Mount Vesuvius*. Film companies did not want to ignore catastrophes or other headline events merely because their cameramen could not get there; enterprise filled the gap. In this spirit the British producer James Williamson shot his 1898 *Attack on a Chinese Mission Station* in his back yard, and some of his Boer War scenes on a golf course. The snows of Long Island and New Jersey provided settings for such action as Biograph's 1904 *Battle of the Yalu* and a competing Edison film, *Skirmish Between Russian and Japanese Advance Guards*. In the latter we see soldiers surge back and forth before the unmoving camera, while many fall in their tracks. To help audiences identify the players, Russians were dressed in white, the Japanese in dark colours. The acceptance of such items probably discouraged more genuine enterprise - at least among some competitors.

A different kind of fakery was exemplified by a project of Doublier [...]. The court-martial of Dreyfus had taken place in 1894, before the debut of the cinémathographe, but agitation by Emile Zola, along with the confessions of forgery by a colonel in the French War Office and the colonel's subsequent suicide, brought interest in the scandal to a new pitch in 1898. Doublier proceeded to satisfy it with footage that originally had no connection with Dreyfus. A few words to the audience, and their own imagination supplied connections. Footage of a young French officer at the head of an army parade was promptly accepted as 'Dreyfus.' A large Parisian building became the 'scene of the court-martial.' A tug going out to meet a barge became 'Dreyfus taken to a battleship.' A long shot of the Nile delta became 'Devil's Island,' scene of the imprisonment.

Audience imagination was often relied on for such services. A curious instance involved a much-publicized 1907 African hunting trip by Theodore Roosevelt. William Selig, working in Chicago, found a Roosevelt look-alike and photographed him stalking through a studio jungle, followed by black 'native' porters, also from the Chicago area. He encountered an aged lion, who was then shot on camera. The film was a great financial success. The name 'Roosevelt' was never mentioned. The item was merely titled *Hunting Big Game in Africa*. (Barnouw 1974 : 25-26).

So the important issue was not the "realism" of the photograph but the ethics of the photographer, or the relation of authenticity between film representation and the reality represented. The emerging documentary film genre became preoccupied with how best to transform reality, actuality and facts, observed from a certain position through a camera lens and a microphone, via the editing process, into a coherent statement about the historically given world. This implies very much an awareness of the element of construction and artistic approach, putting documentary films on par with fiction films as 'works of art'. Documentary film makers were preoccupied with the "Creative Treatment of Actuality", but drawing a line with the sort of "reconstitutions" illustrated by Barnouw. The distinction between fact and fiction has to be upheld as an underlying rationale for the documentary film, no matter how blurred in practice.

This basic relationship between the reality depicted and the pictures and sounds recorded is at the core of our concept of documentary. But in interactive 3D documentaries the world depicted does not exist as such, but is generated from data represented digitally in the computer. No matter the degree of photorealism attained, the image is not a photograph of something existing outside the "camera" and independently. While the traditional documentary film sought to establish its credentials through the authenticity of the events and actions in front of the camera, the interactive 3D documentary has to rely on the verisimilitude of the data and the images generated from them, and the veracity of the statements about the real world that it conveys. This in many ways puts it on par with historical reconstructions and animated films, rather than the prototypical documentary.

This may remind us that 'documentary' since the beginning - as outlined by Barnouw - has developed into a specific film genre which is subgenre of what could be called the 'fact film': Other related genres are instructional films, news reporting, promotional films, scientific documentation etc. The 'documentary film' in this narrow sense is very much like the literary genre called the 'essay'. It has the status of an art form and a vehicle for personal expression, as well as a representation of reality. These features we see as important features of the new genre too, challenging naturalistic modelling and photorealism as the main criteria for success in interactive documentaries.

The predominant conception of the documentary film was formulated in the 1920's by John Grierson, the Grand Old Man of British documentary. He was the author of the "definition" of the documentary film as the "Creative Treatment of Actuality". His point was that a good documentary should not be a mechanical or unreflecting registration of what happened to be in front of the camera, but a partisan statement by a director with a strong sense of social responsibility. In "First Principles of Documentary" (Grierson 1932) he makes a distinction between what he sees as the documentary film proper, and the 'newsreel' ("a speedy snip-snap of some utterly unimportant ceremony"), the 'lecture film' ("their ... form is cut to the commentary, and shots are arranged arbitrarily to point to the gags or conclusions") and the

'film symphony' ("the orchestration of movement"). It is important to understand that Grierson was not aiming at a formal definition, but was trying to construct a genre that to him seemed worthy of special attention and further development. In this respect he was very successful.

After Grierson it is taken for granted that "documentary would photograph the living scene and the living story", not "acted stories against artificial backgrounds". Secondly that "the original (or native) actor and the original (or native) scene, are better guides to a screen interpretation of the modern world". And thirdly "that the materials and the stories taken from the raw can be finer (and more real in the philosophic sense) than the acted article."

Perhaps these statements should be taken as prescriptions about means rather than ends, and mainly directed against established practices of the commercial studios at the time, rather than against filmic reconstructions as such. Read this way Grierson preferred real coal workers to play the parts of coal workers, and stories taken from real life rather than the inventions of novelists and screenwriters. Grierson also stresses the need for a strong storyline and dramatization rather than discursive (argumentative) presentations in his preferred form of the documentary. This view is, we think, supported by the two documentaries normally associated with Grierson: *The Drifters* (1929), directed by Grierson, about the life of fishermen and the sea they depend on for living, and *The Night Mail* (1936), produced by him, about the night express between London and Scotland and the men working on it, focussed on the role they play in the delivery of letters and other mail services .

The conceptual core that may be distilled from this, is that the documentary film is a fact film (a representation of the real world) which is dramatic in form, organised around a story (an interrelated sequence of events) and making a statement about some aspect of the reality depicted. This characterization makes it possible to include both animated documentaries and dramatic reconstructions of historical events and situation with live-action actors ("faction" films) (for a discussion of the term 'faction' see Peter Harms Larsen 1990). John Halas and Roger Manwell in *The Technique of Film Animation* (1971) draw a direct line from Grierson's *Night Mail* to animated films used in Public Relations and propaganda, as well as instructional and educational animated films (Halas & Manwell 1971 : 116 - 138). For a discussion of the use of film to "restage" the past, see Sorlin 1980.

This paves the way for a smooth transition to a characterization of the interactive 3D documentary as a dramatized representation of (selected aspects of) reality, created by one or more "directors" (or authors in the wide sense of the word) in order to communicate statements ("views") about that reality.

What this implies in terms of storyline and narrative structure will be discussed later. But first we would like to discuss some further lessons to be learned from documentary films.

The Modes of Production in Documentary Film

The discussion of the relationship between reality and film representation by documentary film makers has given rise to several ways of approaching the reality to be represented during the production process.

Bill Nichols in *Representing Reality. Issues and Concepts in Documentary*. (Nichols 1991) calls them Modes of Representation, and he makes a distinction between 4 basic types: 'Expository', 'observational', 'interactive' and 'reflexive.' While they obviously have to do with how things are finally represented in the finished and published film, these modes are just as much ways of approaching the reality to be depicted during the production of the film. That is why we prefer to refer to them as Modes of Production.

The **expository** mode of production aims at producing a discursive exposition of the facts as seen by the director or producer of the film. The organising principle of the film is the statement and its supporting evidence, and any footage recorded in the field is seen as photographic evidence or illustration for this statement. They will often take the form of interviews and testimonials by key persons. Reconstructions (carefully declared as such) are acceptable. The film may include pre-existing documents, including footage made for other purposes, as long as they fulfil their rhetorical as well as documentary function within the film.

Some of the characteristics of the expository mode are the construction of a coherent world, presented from a godlike perspective, neatly arranged and structured to fit a certain purpose of an ideological or idealistic nature. The backbone of the exposition is often a "Voice of God" spoken commentary that explains or sums up the intended message. The expository mode intentionally leaves little room for self reflection and interpretation on the side of the spectator. This mode is in many respects what was in John Grierson's mind when speaking (derisively) of 'lecture films'.

In the framework of the interactive 3D documentary the expository mode would be something like a guided tour of the depicted world. The ongoing activities could be broken into independent prerecorded sequences, with the user-interaction focussing on selection of which sequence to initiate and in what order. Like a real life guided tour this might involve some exploration of selected areas where it is judged safe to let the user roam, for instance to get more information about artefacts and scenery. The feel would be very much like Hypertext, with the prerecorded actions and the commentary taking the place of written text with illustrations.

The **observational** mode of production aims at exploring a piece of reality or a "slice of life" and to leave it to the user to get something out of it, or rather what to get out of it. The camera and microphone registers whatever happens in front of it and this is conveyed to the spectator of the film with a minimum of editing (this is at least the dogmatic or ideal conception). The viewer becomes the "fly on the wall" which the director tries to imitate. In

film terms this has been labelled 'cinema verité' or 'direct cinema' and is associated with series of stylistic devices that signal the non-intrusive nature of the recording. A handheld camera could be one such device, but of course the most important one is that none of the participants in front of the camera demonstrate any awareness of the cameraman and other members of the film crew.

Typical examples of cinema verité or direct cinema aim at getting public access to otherwise (to the public) closed institutions, environments, etc. in order to explore the interaction going on between e.g. user / inmate / client and the ones in power / skilled staff of different kinds. It is left to the audience to make sense of what is going on and eventually take sides in the confrontations and power plays depicted. The camera - so it seems - "just" registers daily life inside the institution. It is in the editing process, first and foremost, that the separate takes are organized to a coherent testimony about a particular institution.

In an interactive 3D documentary the awareness of the use of a virtual camera rather than a physical one may actually make it easier to establish the illusion of unobserved observation. A roving camera could be used to explore a situation full of ongoing activities, allowing the user to select camera position, zoom-factor, angle, panning etc. at will. The 'story' could be a pre-recorded sequence, like the burial ceremony of the Bronze Age, or it could be a sequence generated in real time, like a market scene, where several typical actions and characters could be selected and activated more or less at random. One would probably invent ways of avoiding collisions with people or ghostlike passing through them, while perhaps accepting that the roving camera can pass through walls (or look out from walls), fly through the air, and jump from location to location.

In terms of avatars and agents, the camera in this case becomes the user's avatar, invisible in the world of observation, but with tools of operation visible or otherwise perceptible in the interface to the interactive work.

The **interactive** mode of production on the other hand makes a virtue out of the fact that any film recording necessarily interferes with the activities that are being recorded. (Here of course "interactive" is used in an entirely different meaning from that in "interactive 3D documentaries" or "interactive multimedia work".) The director and/or the crew interact with the characters/people "being or playing themselves" and with expert witnesses; events; daily life situations; historical moments etc. depicted in the film, and so lay bare or expose "the scene behind the scene" or the attitude and intended meaning behind the surface of the construction.

The actual presence in front of the camera of the creator/director and the interaction between her/him and the "protagonists" occasionally creates an intense feeling of commitment and equality. The revealing of the attitudes and intentions of the director/crew may create a kind of transparency, which allows the spectator to form his or her own opinion about the subject matter.

The equivalent form of interactive 3D documentary is one in which the user has some presence in the depicted world, and is allowed to interact with agents present in the picture space (and perhaps the avatars of other users).

Several varieties of this interaction may be envisioned, making for different types of documentaries. Three of those are outlined below:

- 1) The camera functions as the avatar of the user (as in the observational mode) but this time his or her presence in the virtual space is recognized, allowing conversation and other sorts of social interaction. This means that the position and the movement of the camera will have to mimic realistic eye positions and body movements for a person of specific height and physical abilities. The camera would be what in film terms is known as a 'subjective camera' with a 'first person view'. The only parts of the body visible in the picture could be the hands (as well as any tool held in the hands).
- 2) The avatar of the user is present in the space visible through the view-port created by the camera. All parts of the body are in principle visible. The user is only able to see what happens in the immediate environment of the avatar and so the interaction is limited to props and agents within that environment. Movement to other parts of the virtual world depicted will follow natural rules (no passing through walls and closed doors, no flying etc.). The camera would be the "subjective camera" with a "third person view" in film terms.

In some cases the camera is fixed in a specified position in relation to the avatar, e.g. behind the back of the avatar looking forward over the shoulder. The user moves the avatar and the camera automatically adjust its position.

In other cases the program allows a more flexible positioning of the camera, for instance according to the needs of the action or the position of the avatar in the depicted space. The use of the camera may also include "first person view" with close-ups of other agents in certain forms of interaction.

- 3) The user could have visual access to the whole of the virtual world, using a roving camera as outlined in 1), but only be able to interact with props and other agents when an avatar is present as in 2). More than one agent in the depicted world could be controlled by the user, for instance in a complex simulation.

Movement of the camera could be restricted in specified ways, for instance restricted to areas of the virtual world that have been visited by one or more avatars controlled by the user. Movements of the avatars will normally be restricted by "natural" rules like in 2)

The fourth mode of production, the **reflexive**, is the most self-aware. It plays on a meta-level with conventions regarding film language, genre and audience expectations. The very presentation of the story poses a variety of questions concerning the relationship between form and content; reality and fiction; true and false. "It uses many of the same devices as other documentaries but sets them on edge so that the viewer's attention is drawn to the device as well as the effect." (Nichols 1998 : 33). This actually demands very careful planning at the production stage in order to get the necessary material for the final result.

This mode is also interesting from the point of view of interactive 3D documentaries, even if the implied relationship between reality and photographic reproduction does not exist. It is of course possible to design an interactive work that draws attention for instance to the artificiality of the interaction of a present day user with a strange, past world, rather than trying to make the user forget it as a precondition for the "suspension of disbelief" aimed at.

One such device could be the use of certain agents ("guides") that recognize the user-avatar as a stranger in need of explanations of what is going on and who is able to communicate with the user on the user's terms. To all other agents the user-avatar would be invisible and they would go about their business without having to take account of a stranger in their midst.

The alternative to this would be a user-avatar that had to act in a strange world as if he/she belonged there, but without the necessary knowledge and experience. The interface would then have to provide the user with tools to overcome this, such as an encyclopaedia, explanatory discourse, tutorial guides etc., breaking the illusion of total immersion.

Another alternative could be to cast the user-avatar in the role of a 'time-traveller', recognized by everybody as a stranger to be treated accordingly. This would "solve" the problem of differences of knowledge and experience, but at a cost: the events are no longer running their "natural" course but have to take into account this strange agent .

Anyway, in a 3D interactive context the user could be the co-creator/co-editor of the material available and enabled to play with genre conventions and to turn these upside down. Besides, the user could be able to exploit different narrative strategies in the construction of a story or plot or an argument. The user might choose to see the world or study the subject matter from unusual and surprising angles (provided that these are worked out by designer and programmer), or employ a multilayered perspective in order to gain alternative kinds of knowledge and insights within the field of interest.

Story and Discourse. Dramatic, Narrative and Discursive Presentations.

Seymour Chatman in his two books on narrative structures in fiction and film (Chatman 1978 and Chatman 1990) has underlined an important ana-

lytical distinction between the story (series of events with actors, props and scenery) communicated in a narrative, and the narrative forms used to communicate that story to the reader, listener, spectator or whatever. He prefers to call the two aspects 'story' and 'discourse', other terms may be found in other authors (what he calls 'discourse' is called 'plot' in the tradition of Russian structuralism). And both his terms are slippery, especially 'discourse', probably one of the most overused terms in modern humanistic and social research.

To Seymour Chatman and many other modern writers any rendering of an interconnected series of events (a story) is a 'narrative', but the means used for narration may differ. So both a novel and a film may in this sense be a narrative, one based on a verbal (textual) presentation of the story, the other on moving images of actors, props and scenery (of course together with dialogue, sound effects and music).

In his first book Chatman takes the stand that films are normally 'non-narrated', that is without a Narrator in the sense implied in all verbal narratives. A Narrator is then a special case found in some films, either a first person Narrator - one of the characters represented in the film - stepping forward at times to speak to the audience, or an off-screen Narrator's voice presenting certain information about the Story and its characters. (The use of written text for the exposition at the beginning of the film is a special case of this type of Narrator.) It is interesting to note that documentary films are often 'narrated' in this sense, having a verbal commentary binding the image sequences together and explaining their meaning.

In his second book Chatman then changes his analysis and insists that all film narratives imply a Narrator, using the language of film rather than verbal language for the narration.

This may be seen as a mere terminological problem, but underlying this is a real conceptual one. If we turn to the father of all narrative theories, Aristotle, we find that he insists that there are two distinct forms of presentation of a 'story': the Dramatic and the Narrative. In the dramatic form the story is enacted in front of the spectator, the drama is a spectacle arranged to convey the story, by the actions unfolding in the "present" of the play and by whatever is made known about the past through these actions (primarily the dialogue). The narrative on the other hand is "told" by a narrator, using only verbal means, and describing agents, props and scenery, rendering their dialogue and exposing relationships and motivations through the comments included with the narration proper. This distinction is underlying the whole of the discussion in *De Poetica*, but the following four quotations bring out the point:

A third difference in these arts is in the manner in which each kind of object [= action] is represented. Given both the same means and the same object for imitation, one may either (1) speak at one moment in narrative and at another in an assumed character, as Homer does; or (2)

one may remain the same throughout, without any such change; or (3) the imitators may represent the whole story dramatically, as though they were actually doing the thing described. (*De poetica*, chap. 3, p.1448)

[Epic poetry] differs from [tragedy], however, (1) in that it is in one kind of verse and in narrative form; [...] (*De Poetica*, chap. 5, p. 1449)

A tragedy, then is the imitation of an action that is serious and also, as having magnitude, complete in itself; [...] in a dramatic, not in a narrative form [...] (*De Poetica*, chap. 8, p. 1452)

In a play one cannot represent an action with a number of parts going on simultaneously; one is limited to the part on the stage and connected with the actors. Whereas in epic poetry the narrative form makes it possible for one to describe a number of simultaneous incidents [...] (*De Poetica*, chap. 24, p. 1459)

An equally useful distinction between narrative and discursive presentations on the other hand comes out of rhetorical theory. In the presentation of a law case the actual events to be discussed are normally presented in a so-called 'narration' (Latin "narratio"), while the arguments *pro et contra* are presented in a discursive text (discursive in the sense of arguing step by step, exemplifying another well-established meaning of the term 'discourse').

Taking works of historical research as an example, we can then make a distinction between narrative and discursive presentations of what in Chatman's terms is a 'story', for instance a sequence of historical events. The narrative will focus on the action, the actual doings of the agents, and the way that actions lead to other actions. While the discursive presentation will focus on causes and consequences, and the arguments *pro et contra* are specific interpretations of what is going on.

We may then talk of three fundamentally different ways of presenting a sequence of events that form a 'story': 1) a dramatic re-enactment in the form of a spectacle taking place in front of the viewers (this is the Drama of traditional Poetics); 2) a verbal re-telling of the events, focussing on actions, motives and feelings of the agents, and describing the setting and the "props" involved. (this is the Epic of traditional Poetics, but also the modern Narrative in a narrow sense of the term); 3) an analytical, argumentative presentation of the events (this should be called 'discourse', but as said above this term is dreadfully overused by modern theoreticians; we shall use 'discursive presentation' for lack of better).

In all three forms, somebody - the Author of the work - is responsible for organising the presentation, but this is not the same as the Narrator. In the case of the Drama, a Narrator may be part of the enactment, but if we follow Aristotle, the Drama is not narrated. In the discursive presentation it would

again be best not to talk of a Narrator, since the text is not a narration, though the presentation will of course have an Implied Author.

This takes us back to Seymour Chatman and his problem with the narrative status of film, or rather the problem of 'narrated' versus 'non-narrated' films. We think that this problem reflects an important issue that also has bearings on our understanding of interactive 3D documentaries.

Basically the types of film we are talking about are dramatizations. The actors in front of the camera are "imitators" in Aristotle's terms. And "They [...] represent the whole story dramatically, as though they were actually doing the thing described." A Narrator may be part of the spectacle, either on-screen as part of the "play", or off-screen as an external commentator (or both). But in the absence of such a Narrator we would have to say that the film was 'non-narrated'.

But on the other hand in film we find the same type of intervention between story and spectator that is found in the typical narrative, such as a novel, short story or fairy tale. In verbal presentations there always is a distinct narrative 'voice' describing the actions, telling us about the motives of the agents, clarifying relations of time and space, colouring the story with feelings and interpretations, establishing a 'narrator's point of view' that has to be kept separate from the points of view of other agents etc.

As has been amply demonstrated by Seymour Chatman and many other students of film, the use of camera movement, camera angles, montage, shots and cuts, sound effects, music etc. etc. implies a strong narrative presence that does not (or only to a limited extent) use verbal language as a means of expression but a special film language. Seen in this light we would say that yes, all films that present a story are narratives, they are 'narrated' even if they don't have an explicit Narrator.

So with film it seems that we have to make a distinction between two different types of Narrators: The Implied Narrator who is always there, and who organised the way the Story is represented in the 'Discourse' of moving images and sound. And the Explicit Narrator that may be used sometimes for special effects.

In documentary film an Explicit Narrator is often used, typically combining narration and commentary. The Narrator is normally talking from the position of a knowledgeable observer who is not part of the situation described in the film action, but a mediator between the depicted world and the spectator. But it is important - in documentaries as well as in fiction - not to identify the explicit and the implicit Narrator. The explicit Narrator is one of many tools that the implicit Narrator has at hand to tell the Story.

But new problems arise when we try to apply these principles to an interactive documentary.

Are Interactive 3D Documentaries Narrated or Non-narrated? Narrative Versus Explorative Modes.

This analysis then leads to the conclusion that a film "telling" a story is also a narrative with an Implied Narrator. This covers the typical documentary film as well - though the 'lecture film' is discursive rather than narrative. The role of the Implied Narrator is to organize the flow of the story, to select which parts of it to disclose when, to direct the viewer's attention using camera movements, close-ups, selective focus etc., to create meaningful contra positions using montage of shots and to organize the temporal "rhythm" of the moving images for timing, suspense, relaxation etc.

But what happens when the flow of events is controlled by the user, not an Implied Narrator? Conceptually we will still have an sequence of inter-related events, with agents, 'props' and scenery, in one or more locations, that is a Story. But is it a Narrative?

One way of answering this question - and the one typically chosen - is to say that the user has taken over the role of Author, Director or whatever. So why not the role of Narrator? He or she is so to speak telling the story to himself or herself. This is about as meaningful as talking of somebody seriously playing chess with him- or herself. A vital part of the game of chess is that the two players have to figure out the intentions of the other player, while it is not possible if the two players are the same person - in the normal case - to prevent one player from knowing what the other is thinking.

When the user is in control of the flow of events and of the camera displaying the flow of events he or she is not - as a director - using the camera to direct his or her attention - as a spectator - to something that might otherwise be missed, or making sure that this is done with the right timing to create a pleasing aesthetical experience. The user is - as a spectator or participant - turning his or her attention to something in the virtual world and directing the camera accordingly.

When reading the books on writing for interactive media mentioned in the introduction (Samsel & Wimberley 1996 & 1998, Garrand 1997 and Korolenko 1997) one is struck by the fact that exactly the lack of control over the normal narrative tools, is a main concern for writers nurtured on film and turning to interactive multimedia. They want to have a strong Story with interesting characters and a setting that provides fascinating images. And they want narrative control for fear of boring the user. Hollywood script writing conventions that focus on dialogue, rather than the development of characters and settings, supports this tendency when imported into multimedia productions.

For practical reasons it is not possible, nor economically feasible, to work out all possible outcomes of user interaction so that the resulting "narrative" is always optimal. The result is often a reduction of user-intervention in the

virtual world and a reliance of longer prerecorded action-sequences using traditional film techniques of presentation. In such cases it of course seems very meaningful to talk about an interactive narrative with a typical Implied Narrator.

But in the many cases where user-intervention is frequent and the user is allowed to explore the virtual world and its potential for events and actions more or less at will, the term 'narrative' seems unnecessarily contrived. And no presence of a Narrator is felt. In this case 'explorative' would be a much better word than Narrative. The user is an 'explorer' of the world created by the Author or Director of the work. And their role is that of creating characters, props and settings, the rules governing their behaviour, and the tools that allow the user to interact with the world - and to interact with the characters (agents) encountered as part of the exploration. Levinsen (1997) also makes the point that "exploration" seems a much better conceptual model for multimedia presentations than "narration". The same point is made by Stigel (this volume). In the gaming world this kind of work is known as a 'simulation'. They include working models of aeroplanes ("flight simulators"), racing cars, tanks, submarines etc. Most war games that aim at historical accuracy are simulations. Less warlike are the "sim"-series: *Sim City*, *Sim Life*, *Sim Earth*, *Sim Ant*. Also included are an endless series of managerial and economic simulations like *Railroad Tycoon*, *Pizza Tycoon*, *the A-train*, *Capitalism* etc.

From the tentative examples of interactive 3D documentaries given here and earlier, it should be obvious that these works will lie on a continuum from predominantly narrative presentations to predominantly explorative presentations, with some discursive presentations thrown in. So the answer to our question is not a simple yes or no. It depends on the sort of control that the designer has built into the user-intervention and the purposes served by different types of intervention.

Interactivity and 3-Dimensionality

A more detailed discussion of the term 'interactivity' is outside the scope of this article. Other contributions to this volume as well as other sources have dealt with the intricacies of the term and the related concepts. But we think that one aspect has to be discussed and that is the relationship between interactivity and the perception of 3-dimensionality in an interactive work.

In one sense any traditional film is a rendering of a 3-dimensional world on a 2-dimensional screen. This is simply the result of using photographic images. And many animated films use graphic techniques that underline the 3-dimensionality of the space depicted.

A good question then is: what is the difference between the 3D to 2D projection of any documentary film and the sort of 3D we are talking about. What makes the question really intriguing is the fact that nowadays 3D

digital modelling is used extensively for special effects in fact and fiction films.

With film the user has to accept the rendering of the 3-dimensional world that was selected by the director, including the specific sequence of 2D-images. A film shot or sequence of shots may give the user the illusion of moving around in the depicted space, and camera movements and other devices may actually enhance this perceptual experience. Looking at the scenery the user may feel that some exciting or existential experience is waiting around a certain corner, but is bound by the director's decision whether to disclose it or not. This is an important item in the tool-box of the film narrator.

Interactive 3D on the other hand allows the user to turn that corner and to explore parts of the townscape not immediately visible at first. Objects may be turned around and monuments looked at from all sides. This is - we think - the crucial difference between the two types of 3D to 2D projection, and this is only possible in interactive works.

But it is a special type of interactivity. Interactive documentaries may involve interactive selection of film-like sequences in a form of interaction which, as already mentioned above, should perhaps be categorized as a type of hypertext. And other forms of user-system interaction could be included. But only if the user has the possibility of actively "entering" the depicted space and to explore at least part of it in depth and at will, does the work seem to deserve the term 'interactive 3D documentary.'

This implies the use of a digital model of the space depicted and not simply a series of a 'flat' bitmaps of the projected images. But the use of such a model does not in itself imply this type of interactive 3D since it could just be used to generate a film-like, 'pre-recorded' sequence.

Again the space depicted does not have to be photorealistic or realistic in any other sense - apart from the fact that it has length, width and depth. Moving around a highly stylized or abstract 3-dimensional space would fulfil the criteria as well.

The Film Camera and the Virtual Camera of the 3D Documentary.

The physical camera is built to capture what's in front of it and is able to pan, track, tilt and zoom, and also to speed up (resulting in "slow motion" pictures) or down ("fast motion"). Its ability to function as an extension of the camera person, to be his/her eyes and body, is one of the camera's distinctive features. The built-in ability to represent or simulate reality masks the built-in distortions of the camera lens.

Creators and audiences have learnt to see the world through the camera representations and distortions and accepted this artificial view of reality as

reality. And with the highly artificial principles of 'continuity' "masked" as "seamlessness" (see Jens F. Jensen in the present volume) the feeling of "being there" was established as a convention hardly ever questioned, when it comes to the notion of naturalism. The set of rules that apply to representing or simulating reality are constructions that we, creators and audiences alike have come to accept as natural. The shifting view points between first and third person are constructed and conceived effortlessly. And as a film audience we do not fall in and out of our engulfment due to limitations or shortcomings of the camera's ability to cover the whole scene and fluidly shift from one position to the other following what is going on. So when we talk about film representations or simulations of reality, we as an audience are well conditioned to expect a very high level of credibility and plausibility. These expectations are in certain ways transferred to all media representations of reality and the actual world, which in some cases proves to be a drag to the new media.

The "virtual camera" is in a way non-existent. It is not a fixed artefact with specific properties. It has to be constructed from one production to the next and may be programmed with specific limitations as far as camera movements and shifting perspectives goes. The virtual camera's range of possibilities is put to test when it comes to notions of representation of reality, simulation, continuity, narration and interactivity, all of which except the latter are simultaneously closely related to film editing principles.

In many computer games that rely on a film like presentation of the game world (such as certain Adventure games or Role Playing Games) the first person point of view holds preference in order to make room for or use of different degrees of interactivity. This is in contrast to most film representations. In film a first person view is seen as an artificial form of narration, which is normally used for very specific purposes only, since it attracts attention to the camera technique itself and thus is perceived as an expressive tool suitable for creating special effects or moods. The usual third person narrative device allows for spectator immersion and character involvement and at the same time ensures acceptability and credibility as far as representation of reality goes. And the film camera then has no problems showing the movements of the protagonist or conveying the action.

The algorithmic based virtual camera on the other hand has - historically seen - had to take into consideration and overcome some limitations of movement, continuity and range of view (as had the physical camera of the early days of film). The designer and programmer will often be placed in the dilemma of constructing camera movements and camera angles emanated from film, which "look good" and thus hold a visual fascination, or accept the "limitations" (seen from a specific film point of view) and instead explore the advantages of the interactive components.

Suspending disbelief is considered to be one of the key aspects of narrative engagement; and now we are talking first and foremost about fiction. When it comes to documentary, suspension of disbelief is usually replaced by

questions of authenticity, reliability, credibility and honesty. And this indeed has to do with the camera as a tool for representing the actual world as well as imposing meaning on that world. But in an interactive 3D documentary the screen images have little or no credibility in the traditional sense, seen in the context of the documentary tradition. The notion of reliability and credibility is substituted by notions of immediacy, transparency and interactivity, all of which further the expansion of mediated reality.

Time and Space.

Film language has established a number of conventions regarding among other things, time and space. In film you have a vocabulary of "how to", when it comes to dealing with time and space in regards to genre, theme, story and style. The conventions are based on the fact that the individual film has a specific running time: the actual time it takes for the viewer to watch it, or rather the time it takes for the film to run through the projector. And within this hour and a half or whatever the narrative unfolds with its own sense of time: the time frame of the story or plot. In 3D interactive spaces these two different "time frames" are substituted in certain key genres with game time, which in some way controls the user, timewise. But within this calculated time limit the "author-director" and designer has little control over narrative time, i.e. compression and expansion of time, unless they make use of "cut scenes".

Cut scenes enhance the narrative use of time and space. They constitute a linear continuity, but at the same time take control out of the hands of the user. The user will find him- or herself "lifted out" of the game or the interactive 3D world and "put into" a movie/film, which for some may be quite enjoyable and for others rather frustrating. At the same instance the user will be "removed" from the present scene of action or from the present time (time in the present tense) and find her-/himself in other surroundings, settings or circumstances and in another time (of the day, the year, the century); maybe without the possibility to return to the former situation/ location.

In the construction of time and space some creators may be obsessed with reality and the accurate, detailed accounts of the real world and the specificity of time. So far it is difficult to create autonomous agents/avatars, which live up to the demands of photorealistic representation, moving "freely" and naturalistically in space and time, satisfying the user's need for simulation. But this might not be so bad after all. The craving for realistic images of the world together with simulation and interactivity could actually hamper the development of new or alternative visual representations of reality, based on a different kind of perception and knowledge about the senses and other layers of the mind. Within this latter way of thinking the creators are free to exploit all sorts of possibilities for constructing images of reality that combine elements from an infinite variety of sources; e.g. painting, animation, photography, poetry, film, theatre, writing, sound art, music, and float freely

between different time spheres and spaces. - The advantages of 3D virtual reality are obvious, if you experience the world we live in as adventurous, absurd, surreal, fantastic and consisting of many layers of reality.

The advantages of exploring alternatives to photorealism has been stressed by our colleague Bjørn Laursen in various publications (Laursen 1997a and 1997b; Laursen & Bøgh Andersen 1993).

Script Writing and the Creative Matrix.

Is it possible to adjust the typical film script to a sort of work manual for constructing 3D interactive virtual spaces (seen in a documentary context)?

When you look at the discipline of script writing from a filmic point of view it obviously has proved its extreme importance and is a well established handicraft and art form. In *The Art and Science of Screen writing* (1998) Philip Parker operationalizes the script writing process by way of a creative matrix. The concept of a creative matrix "[...] provides a means of seeing the various elements which make up a screenplay in conjunction with each other, without allowing any one element a determining role over all others."

[...] Within the matrix, story, theme, form, plot, genre and style are seen to be the key reference points when writing a screenplay. Each of these elements will be shown to have a different weight in relation to each other, depending on which type of screenplay is being written. (Parker 1998 : 12)

Seen in connection with the New Media it seems evident that some of this might prove very useful in production design. However, one must differentiate between various screen narratives, and narratives designed for inhabited 3D worlds constructed to take place in actual spaces like caves, theatrical surroundings or amusement parks. In this particular connection we are only concerned with what we might call the screen writing, and not the script writing for virtual performances in "real" theatrical spaces.

In script writing for feature films among other things you need to make sure of striking a balance "between original elements, genre parameters and the style of the narrative." (Parker 1998 : 165) - In script writing for documentaries at times you may not even know what to expect, especially when you are working within the observational mode of production.

But when designing for 3D documentaries you have to plan carefully (for) every single detail, whatever the mode of representation. Which means that you need something similar to the elaborated script and storyboard of the fiction film, even when you are dealing with factual, observational elements.

Looking more closely at the art and science of screen writing for works of fiction, we will notice, that:

As story provides the motivational framework and is illustrated by a development of events, so theme provides the emotional framework and value system of the narrative and is illustrated by the use of repetition. (Parker 1998 : 19)

In this context form is the dramatic shape of the narrative while plot is the way the story and thematic elements are dramatically revealed within this dramatic shape. (Parker 1998 : 21)

In this elaboration of 'story', 'theme', 'form' and 'plot' in accordance with feature film traditions we are made aware of the important differences in design and the structuring of material in the old and the new media. As far as the differences between fiction and documentary goes, the picture is rather blurred, when we think of the contemporary scene with its multiple choices of genres, subgenres, hybrids and mixed formats. But we won't enter further into that particular discussion!

One of the most important features of the new media, the ability to allow the user to interact with and control the flow of presentation, has no direct application within this concept of screen writing. So in order to activate the following question which the 'plot' is supposed to answer, you need to reconsider the structuring of the film narrative and deconstruct it from a user interactivity point of view: "What is the most interesting way to tell the story/ies or explore this theme, within this narrative ?" (Parker 1998 : 24)

According to the traditional film script:

The key purpose of the plot as a whole though is to work at the emotional level in terms of engaging the audience in the narrative's development.

It is the plot that reveals theme but it is the theme which makes a plot worth following. (Parker 1998: 25)

This kind of emotional involvement paramount to film (documentary as well as fiction film) in the New Media has to be transferred to or substituted with the playfulness of interactivity, which creates another kind of engagement with the theme. The notion of plot is expanded to comprise the skills, fascinations, interests and personality of the user. Thus the designer has to construct multiple possibilities when it comes to plot structure and "accept" and arrange for open ended story lines and narratives without conclusions or final solutions. So the prerequisite of the plot to reveal the story and thematic elements in the most interesting or engaging way is radically changed. Some users may (still) be interested in revealing a story with a beginning and an end and try to create a plot in order to do so. Other users may be engaged in the learning process, in fact finding, in the exploration of a subject or theme. And some may interact with the virtual world for the sheer fun of playing without a specific purpose and without finding an answer or a coherence.

The emotional involvement thus has to do with the kind of interactivity invested and not so much with story, plot and the narrative, and this of course significantly influences the screen-work.

So when Parker states that: " These three different aspects of the narrative - active questions, engagement and act structures - are the essence of screen language" (Parker 1998 : 29) we need to problematise at least the latter aspect from the point of view of the user.

Consider the notion of the "Three-Act Structure", which "Establish" (Act 1), "Develop" (Act 2) and "Conclude" (Act 3). Within this structure the writer/-creator/director of the "classic" media has a firm grip on the unfolding of the narrative. But it does not leave much room for interactive components. And thus there is no variety of choices for the user to play with.

Parker (1998 : 95) advises that: "Themes may come and go in the development of a screen work, but recognising and holding on to them at the end is vital."

Again we are dealing with a complex statement of the world created from the director's point of view, which is furthermore underlined in the next passage:

If you are working with a theme, then using the emotional power of a story's means of engaging an audience will significantly enhance the impact of the theme (Parker 1998 : 96)

But when it comes to the emotional power seen from an interactive user's point of view, this has first and foremost to do with the level of immersion made possible by the system of interaction.

Within the art of script writing for fiction films, character development and emotionality, feeling/mood and atmosphere are foregrounded as a necessity for spectator involvement. The three-act structures "provide a means of understanding the development of characters, stories and ideas within the narrative, and that emotional engagement is essential for a plot to work." (Parker 1998 : 100).

Much of a plot's emotional power arises from the genre and style of the narrative. Audience expectations concerning a particular genre play an important role regarding emotional engagement, and various stylistic devices enhance this engagement. When it comes to "classic" Hollywood movies, character development and emotional engagement are closely connected with 'continuity', timing and pace, all of which help the spectator to "effortlessly" absorb or immerse oneself in the gradually unfolding (unfolded) story. 'Continuity', rhythm and tempo are essential elements of dramatic structure: rhythm as the "overall pacing of a narrative" and tempo as the "level of activity within scenes". (Parker 1998 : 132)

Thus the feeling of "being there" constructed by means of an unobtrusive style, a certain rhythm and tempo according to genre conventions and the type of story, naturalistic acting and photorealistic approach are characteristics of most popular audio-visual narratives. In opposition to this mode of conception, production and representation we are interested in various deviations as far as genre and style go. Among the early experiments we find surrealism and expressionism. The expressionistic approach is concerned with form in a non-naturalistic sense. And the expressionistic style is obtrusive and draws attention to itself as style and aesthetic form. In that sense you may as an audience on one level experience the unfolding of a plot and a story-line, and on another level an expressive "commentary" pointing to the fact that this whole thing is clearly an artificial construction, and not a make-believe story for you to step right into and be absorbed by.

These characteristics relate the expressionistic approach to the more self-aware and self-reflective, "reflexive" documentary mode of production and representation that creates a kind of "transparency" (in the sense that you as a spectator/user are invited, so to speak to see through the technical or artificial devices, which are laid bare to you in a demonstrative way). Also this approach or mode creates interruptions in a flow (continuity) or deconstructs a linear story-line, conceived to seduce the spectator to believe in the complex statement about the world made by the (writer-)director of the documentary.

In an interactive 3D documentary you are not bound by these genre conventions and the demand for linearity, continuity and pacing, i.e. pacing across the narrative or within a single scene. Due to the possibilities created by interactivity the writer-director should be able to avoid problems like these facing his or her counterpart in the world of film-making:

The importance of the tempo arises from the problem of either overloading a scene or moment - and thus making it difficult for the audience to take in all of what is being given to it - or achieving too little, in which case the attention of the audience wanders. (Parker 1998 : 133)

[...] However, the moment this sequence of shots ends, the audience needs to be given time to relax and take in all that has happened because it has been overwhelmed. The problem is, you cannot stop the narrative. There is still something on the screen and it is a judgement call as to how long you take before the next significant piece of narrative information is provided. (Parker 1998 : 134)

The major limitation on the pacing of scenes and sequences is the capacity of the human brain to absorb certain levels of narrative information. The two extremes of this produce either a sensation of confusion or of boredom. (Parker 1998 : 134)

The challenges and advantages for the designer of multimedia works are to a certain degree linked to this particular set of problems, which in many

ways can be overcome by providing sufficient interesting material for the user to interact with. In as much as the designer/creator in the New Media is met with considerations concerning narrativity, due to tradition or traditional thinking within the established media institutions, he or she is at the same time expected to free us all from the limitations of spectatorship and provide us with multiple choices with a wide range of possibilities in the form of interactivity. The quotations given above point to the idea of one evident use of the New Media: as a source of information on many levels, provided for the user in a multilayered fashion free to be explored from a personal point of view, at any time and anywhere, in an individual rhythm and tempo. The pleasure of the 'narrative' is replaced by the pleasure of playful interaction (with elements representing facts, fiction or facton).

Concluding Remarks

The answer to the question posed in the title of this article is - as shown by the discussion in between - that the interactive 3D documentaries, as outlined, are something of all the categories mentioned: Film, Drama, Narrative and Simulation. In singular instances these features may be mixed in varying proportions from film-like expositions to explorative simulations.

Some problems that were encountered in answering the question were actually the results of terminological ambiguities, and inconsistencies in terms and concepts between various disciplines and schools of thought. Sorting out the relationship between Film, Drama and Narrative is a difficult matter for this reason, but reveals also that Film and film-like presentations combine both Drama and Narrative in an interesting way worth exploring further. For this purpose it might be fruitful to draw on the idea of the stratified structure of works of art developed by the philosopher Roman Ingarden in the nineteen thirties (Ingarden 1989). This has already been applied by the author himself to novels, theatrical performances, film and music, all based on temporal organisation, and some on rendering worlds and actions organized as stories.

In general the idea of drawing on filmic representations and script writing techniques seems to be worth further elaboration, but has also been shown to have serious limitations, especially in relation to interactive 3D. Film narrative and interactive 3D are not compatible in any obvious sense. Still using documentary and fiction film as a board to play against has revealed interesting features of the new genre "interactive 3D documentary" and this deserves further development.

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