Issues of Sequence in Converging Media: Studying World Wide Web documentaries.

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ABSTRACT

The paper reports on a study where three print articles, three television documentaries, and three Web sites by the *National Geographic Society* were compared, to see what constitutes linearity, and whether nonlinearity takes the place of linearity in Web media.Devices of transition, disposition, and linking are studied, as well as aspects of narration. The Web sites proved to be linked in a manner that most of the time only allows a linear reading.

KEYWORDS

Web, film, print, linearity, nonlinearity, multicursality, sequence, transitions, links, illustrations, semiotics, narratology.

1. INTRODUCTION

Studies of computer texts (using 'text' in the wide sense) tend, in varying degrees, to point to both the novelty of computer texts, and their dependence of earlier media. While keeping a historical perspective, books like Jay David Bolter's *Writing Space* [9], George P. Landow's *Hypertext* [26], and Espen Aarseth's *Cybertext* [2] attempt to set computer texts apart from earlier forms of writing. More recent books, such as Bolter and Richard Grusin's *Remediation* [10] and Lev Manovich's *The Language of New Media* [30], explain digital media from their dependence of earlier media, such as painting, television, and cinema.

Studying Web media, I believe we have to take both approaches. Web pages can combine semiotic systems: text, recorded sound, still and moving images. We have only so many codes for using these different semiotic systems, and even fewer for how to combine them. These codes, or rhetorical practices, are heritages from earlier media. Then we have the new possibilities of the computer: the ability to mix these semiotic systems (multimedia), the global two-way network of the Internet, the speed and programmability of computers, and the flexibility of digital text and images, and so on. Such new possibilities are increasingly influencing older ways of constructing messages. I believe it useful to view Web sites as instances of rhetorical convergence: products of technological convergence and in itself a convergence of media practices — rhetorics — formerly found in different media, analog and digital. What are these semiotic codes and rhetorical practises that are converging? They are conventions, ways of constructing texts proven to be effective in the different media. Techniques such as continuity editing of film or the newspaper's "inverted pyramid" style cannot be deduced from the medium's technology alone. Moreover, many of them are mutually exclusive, they cannot be combined. Authors in a convergent multi-medium have to choose which ones to use, at the same time excluding other possibilities.

In order understand how this determines the rhetoric of popular Web sites of today, we must study actual sites, and compare them to "old media". The most theorised aspect of hypermedia is probably their alleged nonlinearity, and this concept seems to be a good place to start probing into the semiotic of Web media. Nonlinearity is normally defined through what it is not: linearity. But is linearity well enough understood? Only by knowing the difference between the two can we hope to understand nonlinearity.

In this paper, we will examine how print and television documentary construct linear readings or viewings. Then we will see whether parts of this linearity can be found again in reading the Web, or whether multicursality (non-sequentiality or nonlinearity in other vocabularies) takes its place. If we find multicursality, we will study what the mechanisms of this multicursality are.

2. NATIONAL GEOGRAPHIC IN 3 MEDIA

The basis for this paper is a study of a selection of Web "features" at Nationalgeographic.com, television documentaries on *National Geographic Channel* (Europe), and illustrated articles in *National Geographic Magazine*. They covered three themes: (1) Meteorites: a Web site, a television documentary and a magazine article about the danger of meteorites to the earth; (2) Volcano: a Web site, a television documentary and a magazine article about the volcano eruption of the Caribbean island Montserrat in 1994–96; (3) Midway: a Web site, a television documentary and a magazine article about the Battle of Midway in the North Pacific during World War II and the 1998 search for the sunken aircraft carriers from the battle. In total, nine texts were thus analysed [1, 3, 11, 21, 22, 31, 36-38]. All three web sites in the selection contained video, making comparisons to both print and television natural.

The texts (including the films and Web sites) are in a genre we could label science communication, a sub-genre of feature journalism or documentary film. They are written to communicate knowledge on geography, culture, zoology, the environment and other sciences. The National Geographic Society also has a tradition of sponsoring and writing about daring expeditions and explorations to remote parts of the World. These different kinds of knowledge are presented in ways believed to be clear and understandable, and at the same time entertaining and exciting.

To achieve these ends, print journalists rely on the devices known from other kinds of feature journalism They base their stories on interviews and compelling description interspersed with more expository paragraphs. Documentary film also use interviews as a basic technique, between parts in the classic documentary mode with the "camera as eyewitness" often featuring a narrator's voiceover to explain. A widespread practice within documentary and print journalism is to try to "tell a story", which usually means to pursue involvement through the reader's identification with persons in the text and a dramatic curve. Often, this is done by making the text a narrative.

Thus, all the texts in our sample are blends of three modes traditionally labelled Narrative, Description, and Exposition. Seymour Chatman calls these modes text-types [13], and argues that they are hard to discern in practice. These text-types might not hold against a fine-tuned semiotic analysis, but in this paper they serve the purpose as descriptions of three different modes of communication. We will see that though they are covering the same themes, the Web sites, articles and films still are structured very differently. This should not come as a surprise, as there always will be a number of different ways of structuring any text.

3. A SEQUENCE OF PARTS

Many of the world's printed texts are written to be read from top to bottom. Most speeches are delivered in one sequence. Television programs and movies in theatres also have one sequence they are viewed in, from beginning to end. These are the texts we will call linear. Writers have always known that to write a good text, it is important to make this sequence with care, as several sequences are possible from the same material, some more effective than others. In Aristotle's words: "There are three things which require special attention in regard to speech: first, the sources of proofs; secondly, style; and thirdly, the arrangement of the parts of the speech" Rhet. 1403b[17]. Different kinds of texts fulfil different functions, and have different parts and sequences. Again, this has been evident at least since Aristotle discussed proper sequences in his treaties on the kinds of speech and of drama in *Rhetoric* and *Poetic* respectively.

In my analysis of National Geographic material, the texts, films and Web sites were divided into parts. This is done by finding ruptures in the text, points of weakening coherence in Michael A. K. Halliday's terms [19]. Although our texts all are coherent, the different parts establish their own coherence by local cohesives in Halliday and Hasan's terms: references to persons, objects, environments or arguments not found in the parts before and after. As such, a part is an internally united unit that stands apart from what proceeds and follows. In practice, in some parts of the material analysed, the parts were easy to establish, while other sections were harder to divide decisively. This should be expected, texts and films are intricately woven fabrics of signs, and this difficulty just demonstrates the text's overall coherence. After distinguishing the parts in each media text, their order was analysed. Some media-specific differences in between articles, films and Web sites can be characterised using the classic distinction of narrative, description, argument, and exposition. The three television films in our sample are narratives, following a limited number of characters through dramatic events. Less unified are the three magazine articles, Midway being narrative, Volcano containing equal amounts of narrative and descriptive discourse, and Asteroid being expository or descriptive. Of the Web sites, only Midway contains narrative. The bulk of content of the three Web sites is descriptive or expository.

Whether narrative or exposition, the text-type does not automatically command an order for the text's parts. But there usually is logic to be found, at least in mainstream journalistic discourse like our material. In my (linear) magazine articles and TV documentaries, I found three different principles of establishing a sequence in the linear media:

- 1. Chronology (*Volcano* film, *Midway* film, *Midway* article, Asteroids film): Although containing achronies like flashbacks and flashforwards, a narrative progresses in time.
- 2. Geography (*Volcano* article): The order of the parts follows a line in space.
- 3. Classification (*Asteroids* article): The article explains about different kinds of meteors, historical accounts of such, their origin in space, ways of finding them, and kinds of effects of impact on earth.

Chronology structures four of the six texts. This is not a simple chronological sequence, as all the texts contain several flashbacks and flashforwards, what Genette calls anachronies [18]. In fact, a plotting of these anachronies the way Genette does in *Narrative Discourse*, show structures just as complex as many of Genette's examples from Proust. For example, the *Asteroid* movie starts out simultaneously in 1997 (images) and the 1940's (voice-over), moves into a hypothetical future, then to March 1993, 1995, pre-1950, 1997, future, and 1947 in just the first six minutes. Still the overall movement in the film is from ca. 1945 to 1997.

Although listed as chronologically ordered, the *Volcano* article is a narrative, relating the story of the writer's visit to the island Montserrat. The story follows her travels around the island, telling the experiences of the people she meets in each place.

The *Asteroid* article is classificational in structure, that is, it sets up a taxonomy of different kinds of extra-terrestrial objects hitting the earth, the biggest, the smallest, the earliest described, etc. It moves from general to more detailed descriptions, building on what is already said when presenting detailed material. However, this is only a loose ordering structure, and other devices can also be found. It opens with a description of a scene of a huge meteor impact 50 000 years ago, inserted in the middle is the story of a comet impact in 1908, and it ends with the threat of human extinction. These three dramatic stories help establish a dramatic curve. The flow of the article is also helped by smaller-scale techniques, what I call transitions.

3.1 Tying the Sequence

3.1.1 Transitions

Although the discourses in our linear media sample consist of separate parts, they are felt as a continuous line, constantly working to keep the interest of the audience. Smaller-scale techniques are put to use in the very transitions from one part to another. Handbooks for writers offer examples of such transitions. In one such book, *The Random House Handbook*, Crews lists 11 kinds of "signals of transition" that "indicate that the previous statement will be expanded, supported, or qualified in some way": Consequence, likeness, contrast, amplification, example, concession, insistence, sequence, restatement, recapitulation, and time or place [14, p.113].

In my material, I have found 10 transitional devices, greasing the movement of linear texts.

- 1. Chronology ("later").
- 2. Reversed chronology ("before this").
- 3. From particular to general (metonymy).
- 4. From the general to the particular (example).
- 5. Causality (from cause to consequence).
- 6. Reversed causality (from consequence to cause).
- 7. Similarity.
- 8. Contrast.
- 9. Movement in space.
- 10. Logic (premises and conclusions).

These are significations of semantic relations, they spell out the relations between sememes. I found these 10 devices in both print and television. The TV documentaries analysed have even more transitional effects at its disposal. Television films can employ at least five systems of signification (tracks) simultaneously: images, text, spoken language, other sounds, and music. Not only can different transitional relations be used simultaneously in different tracks, but they may also be asynchronous. A cut in one track is less disruptive if one of the other tracks continues. This is a common editing practice, found in a lot of instances in the films. Other editing practices achieve similar effects, such as continuity in space and movement between shots, and dissolves between similar-looking objects, a sign relation that is unique to filmic media (Figure 1).

We kind find reasons for the use of these transitions in different semiotic theories. Both Umberto Eco [16] and Halliday [19] point to the need for predictability in communication. The addressee



Figure 1. Asteroid film: A dissolve between the result of a gunshot into sand (left) and Meteor Crater in Arizona (right) demonstrates the similarities.

needs to be able to guess fairly accurately what will be said next in order to comprehend easily. It follows that a rupture in a text, a change of topic, will be felt less abrupt if the author makes an effort to spell out how the new topic relates to what came before. This semiotic of transition, based on relations between sememes, on similarity between signifiers, and on breaking at different points in different semiotic systems, is a gloss effacing a well-known fact: Although the sequence of a text's parts is determined (e.g., by narrative or argument), the sequence is only one of a large—perhaps unlimited—number of equally possible sequences.

The ten transitions listed above can be found in all of the articles and films analysed, regardless of their organisation (chronology, geography, or classification) or dominant text-type (narrative, description, exposition). As noted, all but one of the articles and films are dominantly narrative, and this powerful device has its own ways of uniting a line.

3.1.2 Narrative Ties

Roland Barthes wrote about linearity in S/Z. His analysis concludes that linearity is dictated not by chronology as such, but by the sequence of actions, and the control of knowledge in the discourse, what he named the hermeneutic code.

The five codes mentioned, frequently heard simultaneously, in fact endow the text with a kind of plural quality (the text is actually polyphonic), but of the five codes, only three establish permutable, reversible connections, outside the constraint of time (the semic, cultural, and symbolic codes); the other two impose their terms according to an irreversible order (the hermeneutic and proairetic codes). The classic text, therefore, is actually tabular (and not linear), but its tabularity is vectorized, it follows a logico-temporal order. It is a multivalent but incompletely reversible system. [4, p. 30]

These codes are distributed all over the text, and give coherence to the storyline as a whole. Barthes's five codes were formulated to fit a piece of classical narrative fiction, and not factual texts, whether narrative, argumentative, descriptive or expository. Thus, they may not fit our material exactly, but I believe they do help us understand how the narrative texts succeed in establishing a storyline that keeps the interest of the reader.

For instance, Barthes put references to chronology as a subclass of the cultural code, as references to a chronology is a way of lending realism to a fictive story-world, an effet de réel [4, p. 273]. In documentary texts like ours, however, the chronology of events might actually be an important part of the story conveyed. Furthermore, not only giving fact or realism to the text, markers of chronology are important in understanding how the parts of a discourse should be pieced together into a story, as events can be told out of order. As long as the reader can recognise an event's time in relation to other events, she can easily put it into its place in her internal map of the story's chronology. This does not come out in Barthes's analyses, as the texts he analyses are perfectly chronological in order.

The linear stories have long chains of actions spanning large portions of and long periods of time as well as shorter ones. These long over-arching chains of actions keep linear texts together in one single line. In the Asteroids film, a running theme throughout is geologist Eugene Shoemaker's struggle to win acceptance for his theories. Again and again, the film refers back to this theme, adding a new link in the chain of events, bringing coherence to the film.

As seen in the quote above, Barthes believes that in addition to the proairetic code, or the sequence of actions, the hermeneutic code controls linearity in a text. The hermeneutic code is the control of knowledge in the discourse. Knowledge of what has happened; how and why it happened and with what consequences; when it happened; and how it all ended. Posing an enigma at the start of a story, and slowly releasing the answer keep the reader or viewer's interest. In the Midway film, we wonder until of the film whether Ballard will actually find the sunken *U.S.S. Yorktown*, while the narrator keeps returning to this question over and over.

3.2 Pockets of narrative

Both magazine articles and documentary films relay heavily on citing small descriptive episodes, small pieces of narrative: a trip, a visit and so forth.

Chatman [13] points out that narrative and description may be found in texts that are dominantly argumentative or expository as well as narrative or descriptive. This is certainly the case with our material, where these episodes are found in all kinds of texts. We will call them episodes as they usually are quite short, and may be about a person we will not meet again. In both kinds of text, they often stand as (metonymical) examples of a greater problem or a repeated task; showing, not telling.

Usually, introducing a new episode makes the transition to a new segment. The present episode is closed, by establishing an intermediate closure, and in the films, the camera usually moves away. Either it moves with a character's view to a distant object, or it tracks away from the scene and the character. A new time or place, other persons are brought upon stage, usually signalled by a conventional establishing shot or a shot of people arriving, while the narrator's voice anchors the pictures in time and place. This structure of arrival-scene-departure gives a special effect: For a film about asteroids, comets and meteorites, Asteroids have a remarkable number of shots of cars driving to places! The events in the film Return to Midway are mostly taking place in one spot in the North Pacific, but the editing achieves the same effect of intermediate closure by piecing together a cyclic movement from sea to air to sea again. Return to Midway mobilises an impressive amount of documentary footage from the 1942 battle. Each round in the World War II air battles start with planes getting ready and taking off, the camera being on the carrier ship's deck. Then the planes are filmed in the air, and bombs falling, the camera being on level with the planes. As the bombs fall, the camera's point of view shifts to ground level, where the effect of the impacts is shown, as well as planes crashing into the water. From sea to air and back to the sea, the cycle is complete, and the episode is connected and well rounded off visually.

We will return to these narrative devices when discussing narrative in the Web sites, but first, we will look for nonlinearity.

4. WITHOUT THE SEQUENCE

Many writers throughout history have related their trouble in organising their thoughts in a linear fashion. Gunnar Liestøl, for example, finds examples of such laments in the philosophies of Plato, Hegel, and Wittgenstein [29]. In the origins of hypertext we find a similar voiced dissatisfaction with the linear organisation of alphabetic writing. When Vannevar Bush launches the influential idea of the "memex" in his 1945 article "As We May Think", it is a library ordered by association, like the human mind, rather than hierarchy. In this library, any record can be part of a number of "trails"; the libraries have "a mesh of associational trails running through them" [12]. In 1965, Theodore H. Nelson writes: "Let me introduce the word 'hypertext' to mean a body of written or pictorial material interconnected in such a complex way that it could not conveniently be presented or represented on paper." And in a footnote he adds: "The criterion for this prefix (hyper) is the inability of these objects to be comprised sensibly into linear media [...]"[32]. He reformulated it in 1974: "By 'hypertext' I mean non-sequential writing. Ordinary writing is sequential [...]. But the structure of ideas is not sequential. They tie together every which-way [33]". In Tim Berners-Lee's original World Wide Web sketch of 1989, Bush's argument is echoed: "[...] a 'web' of notes with links (like references) between them is far more useful than a fixed hierarchical system [8]".

Scholarly studies of different kinds of hypertext have stressed hypertext's opposition to linearity, using the terms nonlinearity or multilinearity. Examples include Yankelovich, Meyrowitz and van Dam's "Reading and Writing the Electronic Book" [39]; Landow and Delaney's "Hypertext, Hypermedia and Literary Studies" [28]; John Slatin's "Reading Hypertext" [35], George P. Landow's "The Rhetoric of Hypermedia" [25], *Hypertext* [Landow, 1992 #23; as well as Espen Aarseth's "Nonlinearity and Literary Theory" and the 9 other essays in Landow's collection *Hyper/Text/Theory* [27]. Later, in Cybertext, Aarseth first replaces the term nonlinearity with multicursality, and then includes multicursal texts in his more nuanced concept of ergodic literature, literature where the user in a reading "will have effectuated a semiotic sequence", literature where "nontrivial effort is required to allow the reader to traverse the text", an effort beyond simply reading and turning pages.

5. LINKING

The device that potentially gives hypertexts the power to go beyond linearity is linking. I find it useful to discern between three kinds of links, operating according to different logics: Navigation links, presentation links, and relation links.

Navigation links are present on every page in a section of a site, most often on top of the page or in a menu bar on the left. They give the reader the ability to locate a part of the text through only a few clicks, thus their name. Navigation links give an overview of the whole hypertext by dividing it into categories. Hence, like sememes in a semiotic code, their logic is positional: a reader will deduce what probably is contained in a section not just by relating the signifier of the link anchor to its usual signified, but by considering what other categories there are. A section contains what is not in the other sections.



Figure 2. *Midway* Web site. Presentation links at the bottom of the screen, "file tab" navigation links at the top.

Presentation links are links used to display the next or previous page of a part of the text, to start a movie, and other controls of the display of the current text body. Typical presentation links are the "next page" button on the bottom of a page, or the "read whole story" links on the front page of a news site. They are similar to page turns in a book: necessary to proceed in the text, but not formative to the text's structure. In most books, most pages can be broken, if not at any place in the text, so at least a lot of places, without altering the text. The Bible is the same, whether it is printed on 800 or 1600 pages. Presentation links are essentially linear; the link text could be "proceed" (Figure 2).

The third kind of link is the relation link, which is a jump to another place in the hypertext that is related in some way or another to the present page or paragraph. Their logic is that of association. If the transitions we found in linear texts would have corresponding ways of linking, they would be transition links. But:

There are no relation links in the Web sites analysed, only navigation links and presentation links. As one would suspect, similar (or even identical) events, facts or information are treated in different pages of a Web "feature", but they are never directly linked to each other. The Midway web may serve as an example:

4.2 Linearity in the Midway Web.

In the *Midway* Web, Navigation links are found on the top of every page as "file tabs" (Figure. 2).

A lighter colour indicates the reader's present location. The tabs give access to the five main areas: *Ballard*, *Briefing*, *Ships*, *Dispatches*, *and Findings*. Readers are encouraged to read the areas in this sequence, not only from the ordering of them from left to right (or top to bottom on the first page), but also from links between bottom-level pages. Starting in the *Ballard* area, and clicking "next" at the bottom of each page, one is taken in an unbroken sequence through *Ballard*, *Briefing*, and *Ships*. We will call this the "default" sequence.

Readers do have some other options. Each of the five areas are subdivided, the subdivisions being listed in a column at left, and the lighter colour shows the location there as well. These navigation links give the user the possibility to read at a front-page level, by clicking the page-top tabs in any order, and to read at a skimming level, by clicking the buttons on the left. To read the full story of each subdivision, however, one has to read linearly, as the subsec-



Figure 3. "Catalogue card" metaphor in the Midway Web site.







Figure 5. Illustration from *Midway* article combines classificational and analytical figures.

tions are further divided in to two or three pages each, with two "back" and "next" links at the bottom. It is possible to read the sequence of the first pages of each subsection backwards, but the reader will have to work hard to comprehend, as many pages need to be read in context of the preceding pages.

4.2 Description and Exposition in Web Media

If we as readers choose to follow the "default sequence" in the Midway Web, we move through different textual modes. After a question-and-answer interview in *Ballard*, a narrative starts: the story of the Battle of Midway. It is mainly chronologically ordered, and continues through 14 pages in *Briefing* and 4 pages in *Ships*. Then, the narrative "motor" comes to a halt as we come to the "catalogue card" section of *Ships* (Figure 3).

There are no more "next" links from this point on, but if we as readers continue to visit the navigation tabs in left-to-right order (the way we read in Western languages), we continue the chronological order: We have read why the story is told (Ballard interview) and the story of the Battle (Briefing and Ships), we continue with the story of the search (Dispatches), and the results (Findings). But when we state that the narrative motor stops in the Ships section, we do not merely talk of an absence of presentation links. The text is constructed in a completely different mode, it changes from narrative to description only. As the four catalogue cards with the ships are similar in content and layout, we are no more reading a story; we are comparing ships on a common scale. Readers get into a mode of research and comparison in this section; the hypertext merely offers its contents and tools to organise them. The pages are no longer organised to construct a sequence, but to present data in even-sized chunks, that the reader may group and regroup freely to gain overview. In the Findings section, the same effect is obtained when underwater photographs of details on the shipwreck are available from a drawing of the whole (Figure 4). This mode of standstill and comparison is equal to the illustrations Gunther Kress and Theo van Leeuwen [24] call classificational figures, which "relate participants in a 'kind of' relation, a taxonomy" (p.81) and analytical figures, which "relate participants in terms of a part-whole structure" (p.89). The illustration explaining the battle of Midway in the magazine article combines both forms (fig 5).

To read such a map, graph, or illustration is to perform comparisons in one's mind, according to the principle organising the signs, whether classificational or analytical. The signs are distributed in a space, their positions themselves becoming signs. But there are no sequence the signs present them in, as signs in sentences and paragraphs of written or spoken language or in film. The reader crisscrosses over the text, reading the signifiers and their positions in a searching pattern.

Our two Web examples consist of multiple pages, and do not, like images, present an all-encompassing overview. The reading process, however, resembles the reading of signs in a figure, essentially nonlinear or multicursal. The material is divided into parts that are comparable in scope and size, and each page is equally available through a set of navigation links that provide overview of the whole. We might say that these parts of Web sites are classificationally structured by navigation links. .Of the other two Web sites analysed, *Asteroid* makes use of a similar classificational link structure for its descriptive and expository content. Information on asteroids, meteors and comets is divided in equally structured pages, accessed from a list of links. In the *Volcano* Web site, however, an exposition of different kinds of Volcanoes is strictly linear, its pages connected with "next" and "previous" presentation links. The taxonomy presented is not represented either in a graphic overview or in the linking structure.

4.3 The Semiotics of Links

The structure of these sections gives the reader freedom to browse at her own will, thanks to the way the pages are linked and the way the links are signified. Links need to be doubly signified. Firstly, as links need to be activated, their presence is be signified. Link anchors can be parts of alphabetic texts, images, and parts of images. Normal codes for links are underlining, a different colour, or a different coloured background. Images can be signified as links by a coloured border, or by placement on the page, e.g., in the margins or next to a short text describing another page. Some sites make their own "icons", images that signify the presence of a link. A link can also be signified by a change when the cursor passes over the link anchor, by changing the link anchor sign, or by a change in the cursor symbol. I list these fairly obvious examples to point the many different codes that enable us to understand where the links are. Codes are not universally shared, few sites make use of all these codes, and many examples can be found of Web pages using a different colour or underlining to signify importance, devices that in other codes signify links. Frustrated users click on parts of text or images that they believe are links, before they search for the actual links using the cursor as an index: if the cursor symbol changes, the cursor is over a link.

Secondly, the destination of the link needs to be signified. Loading a new page is always a disruption, and it might be a severe disruption, displaying a page belonging to a whole other context. Above, we noted the need for addressees to form expectations of what will be communicated. If the reader is to form any expectations of what is to come when activating a link, the content of the destination page must be signified. This is done differently for the different kinds of links I have described. Presentation links does just have to signify that they are presentation links. They would typically read: "next", "previous", "read full story", "play video", or be a rightpointing arrow at the bottom of the page. The destination is thus implied: more of what the reader has already started. Placing links as navigation links, normally in the margins of the page, and often as a list of the particular Web site's sections, also signifies the page that will be loaded: the first page of the section indicated by the link. For relation links, there exist few such codes. Unless the link is within a sentence describing another page, a casual reader most often have a hard time guessing on which page he will land. Local codes exist in some sites. Most surfers know that when a name is linked, in some sites you can expect the link to bring you to the person's homepage or biography. Other sites use a code where a linked name can activate the user's e-mail client to open a new message to the person mentioned. In the Volcano Web, all links in the text open images in a small window. It takes a little reading to discover this local code. The link anchors are general words that in other sites would be relation links, opening other pages of text, so before the reader discover this local code, she might be surprised, even disappointed, that she is never taken anywhere else.

4.4 Multicursal Narrative

Of the three Web sites, only the *Midway* Web contains narrative. This is a marked difference from the films and articles, where narrative was the main text-type. Even the *Asteroids* article, mainly expository in mode, enlivens the discourse with several narrative episodes. In the *Midway* Web, we find no episodes. The narrative in the *Briefing* section tells the story of the Battle of Midway in strict chronology with no achronies, keeping a distant perspective to the events throughout.

We noted in the linear media that coherence was kept by distributing long chains of actions over the whole of the story. Also in this respect, the Web media analysed were simpler than print and video. Chains of actions are short, most often kept within a single page.

We have seen that the *Briefing* section of the *Midway* Web in places is more linear than a book: some pages in the Web are only accessible at the bottom of the preceding page, a traditional book can be opened on any page. Still, the subsections, collections of two to three pages may be accessed in any order. In the *Dispatches* section of the *Midway* Web, a story is told through 27 letters from a reporter. The 27 letters may be accessed in any order. This makes multicursal narrative a possibility.

4.2.1 Enigmas

In the literary hypertext tradition from Michael Joyce's *afternoon* [23] onwards, the story is hidden within a labyrinth of links and nodes. Mainstream Web sites of the 1990'ies are very different from this paradigm. They typically make any page easily accessible from any page with sets of navigation links. In such openaccess hypertexts, narration must be different. If any paragraph is easily available at any time, how can the discourse control the reader's knowledge any more? In a detective novel, we can always peek at the ending, but that is normally considered to be cheating. However, in an open hypertext, the outcome is an equally valid choice. Where the *Midway* film keeps the viewer wondering throughout the film whether Ballard will find the sunken *U.S.S. Yorktown*, the Web feature with the same title starts with the solution: "Robert Ballard (...) found the Yorktown on May 19, 1998."

This is not unique to the Web, however. *National Geographic Magazine* articles routinely start out with stating the outcome. A story always starts with a two-page spread containing a picture that sums up the main theme of the story, with the title and a lead paragraph printed onto it. The lead paragraph sums up the whole story. In the Midway article, the opening picture was an underwater photo of *U.S.S. Yorktown*, effectively disclosing that Ballard's expedition was successful.

This similarity between the Magazine and the Web sites can be explained by the fact that both are designed to be browsed. Many readers of *National Geographic Magazine* report that they tend to flip through the pages, looking at the gorgeous photographs, reading a few captions, and then, maybe, starting to read an article.

Where the narrative films keep the outcome secret, magazines and webs create interest by doing the opposite: by stating what has happened. It may be due to the media's different means of communication. Television films can hook the viewer by dramatic pictures in the opening without revealing the outcome. With text, it is easier to create the drama by stating the result. Print and Web articles rely on the principle of news articles, where the first paragraph summarises the whole story. This "inverted pyramid" principle of writing creates interest by insisting on the news value of what is to come. Further on, pockets of mini-narrative keep the interest: smaller enigmas, focalisations, and episodes. But also by the "how" enigma: If the outcome is disclosed: "The king died", one's automatic reply is "how?" And the answer to that can be infinitely detailed.

4.2.2 Collapsible narratives

The structuralistic strand of narrative theory from Propp [34] onwards focused their attention on the essential functions of narrative; turning points in the story, enabling some courses of action and excluding others. A part of this tradition is the search for minimal or universal narratives, enabled by the obvious fact that stories can be summarised. And when we summarise, we reduce stories to the functions of causality, causes and consequences, leaving out details that are not necessary for the understanding of the story line. When further summarising, we must leave out entire intermediate causal chains of events. It is exactly this aspect of narrative Genette is addressing, when he is able to reduce Proust's massive 7-volume Recherché du temps perdu into one sentence: "Marcel becomes a writer" [18, p. 30]. At the other extreme, any narrative can be fleshed out with more descriptive detail, as Barthes repeatedly points out [5, p. 108]; [6, p. 146]; [7, p. 82]. There probably is a limit to how short a narrative can be. Where the limit is is disputed, but a few words will probably suffice. At the other extreme, any narrative can be infinitely long. Any narration must find its place between the two extremes, choosing which whole sequences of actions to include, and which to exclude, but also choosing the number of details, the number of parts in each chain. In the Magazine article on Midway, we learn that a mini-submarine used in the search broke four times before it found the sunken Yorktown. In the film, only the second of these breakdowns is mentioned. A second example: In the article, the sonar searches are briefly mentioned, in the Web site, this slow and careful process is described in detail. The choice of such details is an important aspect of narration. However, we may strongly suspect most readers would never read the page on sonar searches in the Midway web, if they ever saw it. In an open-access hypertext, it depends on the reader's choices how many actions or events in a story she reads. Still, the story is the same, due to narrative's collapsible nature.



Figure 6. Opaque linking in the Midway Web site.



Figure 7. "Case folder" in Asteroid Web site.

4.2. Opaque linking

The *Dispatches* section in *Midway* Web contains 27 letters from a journalist who was part of the team that searched for the downed ships. The reports were posted on the Web server as they arrived from the journalist, giving a daily update as the expedition progressed (Figure 6).

Now they are available in this archive. On every page in the section, all 27 letters are available from a list in the left-hand column of the dates the letters were posted. Apparently, this is total multicursality. However, there is little hope of guessing what is contained on a page before arriving upon it. The link to each dispatch is signified by the date of the destination page, arguably the least telling aspect of the dispatch. To know what happened on that day, the reader has to browse it to know what the page contains. The discovery of the sunken ship, the climax of the story, happened on 22nd day, and is not marked differently from the others. A narrative is hidden behind the 27 links, but the reader has to navigate in them blindfolded. As we will see, the section could have given the reader overview and control of the narrative, but that would have required better signification of the destination pages. Reading in sequence, from the first day through the 27th is the only way to read Dispatches and be able to predict what you will find on the next page.

5. MULTICURSALITY?

We start to see that the dream of hypertext as a new, multicursal form of writing hardly is realised in our Web sites. The *Volcano* and *Midway* Webs have chains of pages linked after each other with presentation links. Although navigation links are provided, the reader's ability to control the sequence is obscured by a lack of signs of what is at the other end of the links.

Still, the writing is less fluid than the writing in the magazine articles or the editing of the television films. The ten transitional

devices listed earlier are not found in the Web sites. Few attempts are made to bridge the gaps between pages and sections.

Video editing gives many possibilities of fluent sequences. However, in the Web sites, video is only used as a bonus, an asset to attract readers to the text. Short video clips are placed in the openings or ends of the chains of pages, not really related to the written text.

What we have called classificational link structure is the only device we have found where the label nonlinear seems fitting. Interestingly enough, the Web site that makes most use of it, the *Asteroid* Web, puts it within a strictly linear discourse. The *Asteroid* Web is a game in three parts. The first part is an introduction where the user goes through a series of pages where she gets an assignment: to identify what hit the earth in four cases of impact. The middle section has a classificational link structure, the four cases are identical in design, and are all linked to a library of different kinds of impact. (fig. 7) Sequence makes no difference in this part. When the right answer is found in all four cases, the third section opens, a series of congratulatory pages culminating in a short video clip. Multicursality is kept within a linear framework.

6. BEGINNINGS

Whether linear or multicursal, a feature in a mass medium invite readers to spend some time with them. This makes the opening a crucial point. The beginning should catch the reader's interest and encourage her to engage in the discourse.

In our material, there are media-specific differences in openings. Magazine articles open with a two-page picture with the title and an introductory paragraph printed onto it. The picture captures the theme of the story, especially when read together with the paragraph. Anchoring the picture in time and place, the introductory paragraph gives a summary of the theme of the article as well, and in the two more narrative stories, this is done by giving away the outcome at the very beginning. Then, overleaf, the articles move into an episode in an in medias res kind of opening.

We have seen that the film keeps this secret to itself until the end. Instead, the films all open with a prelude that focuses on what Barthes called the symbolic area, the main contradictions to be mediated. Tightly edited, the preludes contains many short shots, focusing on dramatic documentary pictures that encapsulate the conflict and drama of the story (the dangers of meteorites, the force of volcanoes, the horrors of war), but not the outcome. After about a minute, the *National Geographic Television* vignette is inserted, and a new introduction follows. In this introduction, the main characters are introduced, as the camera (and we as spectators) arrives on the scene by air, by boat or on foot.

The Web features focus neither on setting or basic conflict, but on the navigation and segmenting of the webs. They all open a "splash screen", a poster (or cover)-like page with the feature's title, maybe an illustration, and only one link, to what we will call the first page. This first page warrants a promise of content to come, and the user is urged to explore. It does little do entice the reader into the story, it just states that it is there, and which parts it has.

7. ENDINGS

Does a hypertext end? Yes and no, the theorists answer. Not in the same way as classic narratives end, closing off every single thread. Maybe, still, as we may have had all our questions, assumptions and expectations answered, although we have not read all the pages, is the answer of J. Yellowlees Douglas and Terence Harpold after analysing Michael Joyce's Afternoon [15, 20]. In Hypertext, George P. Landow states that "Readers cannot only choose different points of ending, they can also continue to add to the text, to extend it, to make it more than it was when they began to read" (58). If any of us has abandoned a book halfway through, or commented upon someone else's work, we might ask what is new about hypertext in these respects. But it is certainly true that as long as a hypertext does not have a single line, it cannot have a single ending. One of our Web features, Asteroids, does have a single line, and an ending. The other two not. In Volcano Web, and in parts of Midway, we have good enough overview of the text to realise that we have read all the pages. This is still not establishing ending like the documentary films and articles in our sample do. They all round off by pointing to the symbolic area, the larger perspective, the never resolved conflicts: the horrors of war, Volcanoes being constructive as well as destructive, the danger of meteorite impact being minute but having enormous possible consequences.

8. CONCLUSION

This analysis of multicursality in popular Web non-fiction showed that they are a lot more linear than one would suspect from a reading of hypertext theory. They are in fact authored as linear texts, except for sections describing objects. At the same time, they are a lot less fluent texts than magazine articles or broadcast documentaries. In our sample, the Web sites are a bit like small libraries, collections of descriptive texts, hierarchically organised, badly cross-referenced. The rhetorical convergence, far from resulting in a melange of advanced techniques form writing or film, has instead given collections of different kinds of text, with a strong emphasis on navigational links.

The analysis of these texts is not finished. Relations between image and language in the different media is not yet addressed, a grave omission when we consider the pride the National Geographic Society has in its photographs. This paper has also omitted many narratological issues that could have been addressed, such as focalisation and the interplay of time-planes. What I hope is that the paper has demonstrated that analytical tools derived from semiotics and narratology can heighten our understanding of how Web sites function as texts.

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