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Hypertext Conference 2000 in San Antonio, Texas. Report

By Bernd Wingert

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San Antonio, located in the south of Texas, was this year's venue of the [ACM Hypertext Conference held on May 31 - June 2](#) and organized by Frank M. Shipman, last year's winner of the Douglas Engelbart Best Paper Award. San Antonio had hosted a hypertext conference before, in 1991, when, as indicated in a brief reference in the preliminary program, a certain "Tim Berners-Lee demonstrated something called the World Wide Web." The next conference, HT01, will be held in Europe, namely in Århus, Denmark, on August 14 - 18, 2001, and the Program Committee will be chaired by Kai *Grønbaeck* (University of Århus) together with Jane *Douglas* (University of Florida).

The San Antonio event attracted some 150 paying participants, which is approximately the same interest as had been shown in last year's conference in Darmstadt, a detailed account of which was published in this journal (cf. NfD 1999, 4, July; and [on this site](#) as well). This year's program offered a special feature, as the "Digital Library" (DL) followed immediately after the HT Conference, thus allowing workshops and tutorials on Friday afternoon and Saturday to be attended by persons interested in HT as well as in librarianship. I, for instance, had booked a tutorial about the "Open E-Book Initiative" for Saturday afternoon. The ACM HT Conference can still afford a high selection rate, as the 22 full papers and short papers each were selected from among 67 and 48, respectively, papers submitted. That the "Doctoral Consortium" was dropped this time for lack of attendance should not be considered a bad omen.

The conference was held at the Menger Hotel, a sprawling hotel complex with a swimming pool in one courtyard and a tropical garden in the other. The original building had been erected in 1859 and converted extensively around 1900. Compared to the high riser hotels in downtown San Antonio, this one, with its three stories, is of moderate proportions, splendidly (but not showily) furnished and radiating solid elegance. On the whole, it is a good place to recover for a number of concentrated conference days, if only the conference rooms had not been cooled

to deep freezing temperatures. To add to the local color, the Menger Hotel is located opposite the Aloma, originally a Spanish mission which, in the spring of 1832, was the site of a bloody clash between a residual troop of soldiers and settlers within the fortification and incoming Mexican troops. The outcome is not difficult to imagine. Consequently, the heroes of Aloma are commemorated by a monument on the open square which may have turned out a bit too melodramatic. That same year, Aloma was reconquered and constituted the starting point for the battles leading to the independence of Texas. In 1845, Texas became the 28th member of the United States.

Program Survey

The program began on *Wednesday* morning with an Opening Keynote by Scott *McCloud* and then branched out into two sections, the first of which was devoted to "Media Issues in Hypertext" (attended by the author, marked with an * below), while the other dealt with "Hypertext and Education." In the afternoon, one session was about "Open Hypermedia Systems and Infrastructure" (a topic to which another session was devoted the next day), while the other was about *Links and Relations,* with a contribution winning this year's Newcomer Award (for more details, see below). The panel following the same afternoon as well as the "Short Paper Session" can both be summarized under the heading of "Collaboration," developed as a scenario at the panel, while the series of lectures added topics, such as interaction history, navigational aids, and other aspects of user interfaces. An item familiar from last year's conference was an event called "Hyperreading," at which authors presented their work. This *Hypertext Readings by Hypertext Authors* item had now become a firm part of the program and thus was able to attract the undivided attention of congress attendants.

Thursday initially was devoted to the session about "Open Hypermedia" referred to above; this was paralleled by a panel about *Publishing Issues for Hypertext.* The second half contained brief papers on *From Authoring to Design,* and a parallel paper on "Clustering Hypertext." In the afternoon, there were two contributions under "Technical Briefings" of which I am unable to say whether they are likely to generate effects similar to that produced by the contribution by Berners-Lee referred to initially. Instead, I attended *Adaptive Hypertext,* curious, as in Darmstadt last year, whether any progress had been made in this area (not evaluated below).

The contributions presented in the second half of the afternoon in a way constituted the key point of the conference. There was only one section, and it was devoted to *Reading and Interaction,* a topic on which I concentrated already in the last report.

The secret of who among the nominees would be awarded the prizes was lifted at the reception in the evening.

The conclusion of the conference on *Friday* morning was a single section on the subject of *Hypertext Design, Generation, and Evaluation* (not evaluated), followed by the *Closing Keynote* by Jonathan Grudin whom I had heard at a meeting in Berlin years ago, the MMK '96 at Bollmannsrüh, which, *inter alia*, had been about "Learning in the Web." At that time, Grudin had presented an empirical study of handling electronic company diaries, the results of which showed two different forms of corporate culture. In San Antonio, the speaker roamed the cultural history of media, making extensive stops for quotations from various authors, including Plato's Phaedrus dialog.

This rundown is meant to compensate, albeit insufficiently, for the highly selective piece of reporting below. In view of the range of topics dealt with, and the variety of potential specialized interests, this is the only way of coping. Again I am not going to focus on aspects of computer science, but will concentrate instead on the "applied topics," specifically on the problems of reading and interaction. Surely, this is not going to cover satisfactorily areas such as "Open Hypermedia" or "Hypertext and Education." On the other hand, the survey at least indicated that the conference included contributions also on these topics. Here are my subjects:

1. The Introductory Paper
2. Aids for Visually Impaired Web Travelers
3. The Pragmatics of Linking
4. Hypertext Variants and Readings
5. Publishing Issues
6. From Authoring to Design
7. Reading and Interaction
8. The Concluding Paper

1. The Introductory Paper

The idea of semantically motivated branching certainly is broad and flexible enough to gain a foothold also in areas outside of text, image, and film. However, it surely was surprising to hear this year's introductory paper by an author, Scott *McCloud*, who is renowned for his work on and in comics. His "Understanding Comics" (1994) is available as a paperback from Amazon.com for eighteen dollars, in addition to

excellent ratings and enthusiastic recommendations by readers. A book titled "Reinventing Comics" has been announced for publication in August.

He had been drawing comics for the past sixteen years, the author said, and six years ago, he had been diverted by the internet as a subject. However, "digital delivery" had to be distinguished from "digital comics." The "new economy," about which people talked so much, had not yet become a reality; reality began only if bits were truly traded (which is exactly what Stephen King, who created a stir in the media because of his electronic delivery of a novel, recently announced: Selling reading matter by chapters). [This he did, till Chap. 6 of *The Plant*. There is debate whether the experiment failed, as the New York Times stated, or not and the novel "is only on hiatus", as King responded. BW 20.12.00].

McCloud showed classic cartoon strips, for instance, pictures from ancient Egypt, such as "Lemma, the Scribe," Trajan's column with a rising spiraling relief strip, or the "Codex Natali" of the Maya with tables to be folded out and read meander fashion from right to left. The speaker, of course, showed examples of comics on the web, his and those created by others; however, the truly fascinating thing about his presentation were the models he had built with great care, such as the Maya Codex, which the audience were then able to hold in their hands and browse through. "There is a joke lurking inside every media," said *McCloud*, and the question was obvious why he, offering clickable comics on the web, did not add sound and animation as well. That, so the speaker, would imply leaving the terrain of comics, with their glaring snapshots, for the movies.

If he were to think about a technical expansion of the means which he, as an artist, was required to know inside out, it would be "zooming-in" in such a way that branching out of the cartoon frame would become possible. "Keep an eye open," *McCloud* finished; nobody knew how things would go on from here. "You can't demo the future!"

2. Aids for Visually Impaired Web Travelers

Session 2a about "Media Issues and Hypertext" boasted of two nominations for the Best Paper Award, namely the third contribution on the agenda about "Generating Presentation Constraints from Rhetorical Structure," a project by several authors and presented by Lloyd *Rutledge* (Amsterdam), and the first paper, presented by Carole *Goble* (University of Manchester) (another contribution by several authors), about "The Travails of Visually Impaired Web Travelers," which inspired the title of the present section. Ranking second was a paper (presented by Jason M. *Smith*, University of North Carolina at Chapel Hill, with two co-authors) about an algorithm

allowing frame sections in video sequences to be traced. A possible use of this technology, which probably has not yet been implemented, could be in tracing images in crowd scenes. As the contribution about visually impaired web travelers won the Best Paper Award, it may be appropriate to concentrate on it in more detail.

Carol *Goble*, Simon *Harper*, and Robert *Stevens* (who is the visually impaired person in the team of authors) took the traveling metaphor for "browsing" in the Internet seriously, presenting basic conceptual principles and some first practical results of their studies. Their main objective is to make it easier for visually impaired persons, or even enable them, to use what the web has to offer, especially through the development of software environments which can translate and represent (e.g. by description in words) orientation, navigation and mobility aids for this group. One example was analyzed on the basis of the "[Internet Movie Database](#)" both by means of Netscape and by means of a special browser (IBM Home Reader). Nearly all objects which constitute cues for interpretation to users able to see turn into obstacles for people visually impaired (Proceedings, p. 7): "The IMDB is a particularly bad design as no alternatives to the graphics are given, no description tags are included and none of the headings, menus, searches are labeled as such."

The authors are currently conducting a major study with a group of twenty, and seven web offerings. I consider this project worthwhile also because it tries to establish the basic principles of how impaired persons find their orientation, move, and reach their destinations in the real world. This analogy between traveling in the real world and finding one's way in the virtual world generates sufficient productive insights even if it is obvious (which the authors do not expand on) that the virtual world of the web has no real three-dimensional characteristics.

3. The Pragmatics of Linking

The session to be discussed below was titled "Links and Relations," which is absolutely correct as a description and also intellectually inspiring because it at least raises the question whether "links" are "relations" and, if so, of what type. Or, to put it differently, exactly when and from what state of exploration on a "link" is seen as a "relation." This certainly does not apply to a first discovery of the link anchor promising a relation; at this stage, it is in no way certain whether that promise will hold. The four contributions presented in this session can be seen under this aspect of modeling of expectations, and inspiration can be taken from the contribution at the beginning, which won the "Newcomer Award:" "A Pragmatics of Links" by Susana Pajares *Tosca* (University of Madrid). She and Mark *Bernstein* dealt more with this aspect of micromodeling, while the two other contributions, by Licia *Calvi*

and Locke *Carter*, discussed macromodeling. Let us move on from the big things to small ones.

Licia *Calvi's* contribution (Trinity College, Dublin) was not presented at the congress, but should not be disregarded here for that reason, for she deals with an important aspect of media difference between a "book" and "hypertext" on the basis of a short story by an English author available both as a book and as internet HT. So, if the content is more or less the same, how does the medium change experience with the text (and hypertext, respectively) and, perhaps, even with the content? In this case, the content is about a ride in a London tube as presented by descriptions of the maximum possible number of 253 passengers (7x36 plus the driver), which adds up to one fate per page of the book version. *Calvi* arrives at the finding that, of course, the reading experience will be different as a function of the medium, but the contents will not be affected by the medium. In this case, however, this was due to the less than optimal conversion into HT.

"When faced with the task of constructing single-author, self-contained arguments in hypertext environment, ... authors must overcome the expectation of order." Thus, anyway (Proceedings, p. 85), the usual expectation of a connection between a logical chain of arguments and the disappearance of order in the HT as a result of the design principle could be described (as explained by Bolter or Landow). However, and this is the gist of this contribution by Locke *Carter* (Texas Tech University) about "Arguments in Hypertext," this connection no longer has such a dramatic impact if one looks at more recent approaches, for instance in the area of "informal logic" (Toulmin, Perelman) or the "stasis theory" (Fulkerson). In that case, it no longer mattered in what sequence arguments appeared; what mattered was that they appeared at all, as one was able to observe in arguments exchanged in court (Proceedings, p. 88): "Since stasis theory views the entire 'argument act' as one set of items with little regard to order, hypertext argumentation may profit from adapting the classical stases and developing new ones."

What is the purpose of a link anchor in communication? This question was examined by Mark *Bernstein*, an untiring, always inspiring HT propagandist with Eastgate Systems. His contribution contains the argument with an ironic twist already in the title: "More than legible: On links that readers don't want to follow." However, it was the dual purpose of a "link" to make readers follow the link and to branch logically from the existing context. Exploiting this leeway had been the main content of innovations in the past few years. In Bernstein's view, a prototype of an input-sensitive dynamics of a link anchor is an approach which Jim Rosenberg presented at the last conference in Darmstadt with his "intergrams:" layers of text superimposed to the point of illegibility which, after a number of mouse clicks, gradually became disentangled, thus revealing their contents.

Susana *Tosca* argues explicitly on the basis of contributions by Jim Rosenberg (at the '96 conference in Washington), Mark Bernstein (at the '98 conference in Pittsburgh) and by Wendy Morgan (at last year's conference in Darmstadt) and, in this way, indicates that this series of conferences indeed represents a community of discourse. She is interested in shedding light on those processes which occur in the microrange of deciding about the conformity of expectations held vis-à-vis branching offers: to click or not to click? This largely parallels my own approach based on reception psychology. It marks a level far below the large patterns on which Bernstein worked, also the agglomerations of (clicking) actemes studied by Rosenberg, and ranks even above the assessments which Wendy Morgan made her topic. *Tosca* argues: "... links force us to make meaning *before* and *after* traveling them." Which means that, when encountering a link the very first time, the reader must form expectations about what the link may produce, can then formulate the appropriate alternative (as *Tosca* does in following a specific approach, the "relevance theory"), and then see, after reading, whether these expectations came true or not. This intensive search for meaning and a context developing the interpretation, turn links "poetic."

This two-step semantic exploration of meaning could be the main point in the experience of reading hypertext. This, at least, was the message one could take home. On the other hand, it makes you wonder why *Tosca* meanwhile discontinued her ambitious reading experiment, announced in Darmstadt last year, with a text by James Joyce. Also William *Collin* no longer pursues his experiment of reading the "Cantos" by Ezra Pound. In my view, both cases are indicative of the fact that reading hypertext really is not easy.

4. Hypertext Variants and Readings

The evening event with authors offering samples of their HT narrations allowed the audience to follow acoustically what had been discussed theoretically in the previous section, namely how to work with links, what designs and overall structures to pursue, or how contents fit other structural designs.

The sequence of presentations was opened by Deena *Larsen* with a HT, "Dancing in Your Soul," of very simple design, with a very slim text, and with complete links. This was followed by Rob *Kendall* with a story about a meeting between a father and a daughter, both of them immigrants from Eastern Europe, who met again after many years. The part presented, "Spring," was part of a series, "The Seasons," to be published by Eastgate on the web in the near future. In this case, Kendall practically made true what he had postulated theoretically, namely to allow the reader more orientation and more independence. Thus, he indicates in a status line the range of

subjects to which a link to be chosen belongs (such as "father-daughter" or "mother in earth"), in this way causing the horizon of expectations to become more structured. At the same time, a variable shade of color indicates the intensity with which the corresponding subject node had already been visited and read, respectively. The overall structure thus boils down to a hybrid abandoning the pathways of strict, small-scale modularization, and mixing linear and delinearized forms.

Completely different in approach and structure is "Fibonacci's Daughter" by Marjorie *Lusebrink*, with its very rich collection of text and images, including a lottery shop on the mall, with a helical overall structure, and the whole thing preserved on a CD ROM. Jane Yellowlees *Douglas* presented an older story originally written for an on-line magazine of 1991, but never published. The piece is part of a trilogy, one part of which later became "I Have Said Nothing." The story she presented was more remarkable because of the perceptible joy of telling a story than the simple HT structure. Finally, a group of three authors (*William Gillespie*, *Scott Rettberg*, and *Nick Montfort*, who participated instead of *Dirk Stratton*) read and demonstrated under the heading of "The Unknown" what is meant by a story about anything and everything under the sun (and should not be taken too seriously). On the whole, the presentations were a successful mix of serious and funny pieces, always to be taken seriously in their respective approaches, and all of them indirectly raising the question (as they were presented so as to be heard) whether hypertext, in the end, is not something designed more for the ears than for the eyes. (Read more about this section in the article by Susana Tosca on this server).

5. Publishing Issues

The panel on "Publishing Issues" was introduced by Mark *Bernstein* saying that he, as he worked in a publishing company, would not offer his personal opinions and intervene only occasionally, in which case he would don a cap. The panel consisted of three persons whose introductory statements I will cover briefly and then single out a few points of the discussion afterwards.

Christine *Boese* (Clemson University) spoke about her difficulties having a doctoral thesis in the form of a hypertext accepted by the faculty staff. As she explained in greater detail in a different section on Friday afternoon, she finally succeeded by finding a compromise consisting of a printed section containing the most important conclusions and the references (approx. 70 pages), and a CD-ROM on which the HT could be explored. The subject refers to "Xenaverse," an offer built around the TV character of "Xena, Warrior Princess" mainly set up by fans, which was studied under an ethnographic approach and, being launched for the web, could hardly have

been reproduced on paper. This was the purpose of initial attempts to make Boese give up her HT plan. Not without pride she remarked how she had been supported by "beta readers" in this cyber community, and that she still received feedback about her work.

Stuart *Moulthrop* (University of Baltimore), the second speaker on the panel, *inter alia* followed up on the merger of Time Warner and AOL of last year, asking whether this conglomeration of market power marked not only the end of the millennium but also the end of some other things. He raised the question whether the "non-conglomerated publishing practices," such as Xenaverse, Eastgate or other small companies, were able to coexist with such global players in a common cultural, technical, and economic space. Moulthrop's statements can be interpreted to imply that he would not be ready to answer this question in the affirmative.

A different opinion was expressed by Scott *McCloud*, the third panel member. Although he, too, realized the enormous sums of money that were invested in the internet, he felt sure that users would be able, with increasing internet experience, to find those services which were really useful to them, and that the large portals now being built up also appeared to be like bubbles, likely to burst quickly once one had seen through the illusion.

Right after these introductory statements, long queues of participants wanting to join in the debate formed behind the microphones in the hall. As there were no leading questions or criteria to follow, the discussion was rather varied and diverse, ranging from copyright infringement, to working with search engines, to international law, to the basic infrastructure for micropayment schemes. May be, one line of discussion could be singled out from these contributions, namely the question, raised by Moulthrop, of the coexistence and compatibility of large and small structures, e.g, how and in what way powerful companies on the market influence placement on search engines, how monopolies, such as Microsoft, can also exert pressure on content providers (one speaker reminded of the way in which an important collection of photographs, the Barnes collection, had been purchased), and what the relation was between open source movements and those powers which, like Eastgate, are required to live on their contents. This was a point at which Mark *Bernstein* put on his cap and very pointedly warned against fitting a halo on the open source people because, allegedly, they pursued only altruistic purposes. However, it is certainly an interesting fact that, as Moulthrop added, even Xanadu now joined this movement which, all the years before, had been carefully screened by Nelson.

6. From Authoring to Design

This is the title under which David *Kolb* headed a section of six short papers which are best presented in the order at which they were read at the meeting because, in this way, they are more indicative of the order indicated in the title, i.e., from the very first text and design drafts to the final version.

Initially, Chris *Willerton* (Abilene Christian University) pursued the question why the detective story genre had not yet switched into the hypertext camp. He suspected that this might have to do with the close way in which readers are guided in such stories, the evidence and insights they are offered, or not offered at specific points in the narration. However, on the basis of his own experience in writing a detective story ("Londale Hotel," soon to be published in an omnibus by Eastgate) he realized that he had had misconceptions about reader expectations and hypertext structures rather than that the whole genre, in fact, was not suitable. For the many HT structures systematized by Mark Bernstein at the '98 conference, it was surely valid to say (Proceedings, p. 235): "For a mystery writer, whose craft consists in hiding and revealing facts, these capabilities could be invaluable."

Experiences of students attempting to submit their term papers as hypertexts were the subject of a report by Margit *Pohl* (co-author, Peter *Purgathofer*, TU Vienna). Students, in fact, did run into difficulties in these attempts. Using HT tools the authors themselves developed, and the corresponding protocol methods, they pursue the question how specific activities (such as writing a text, installing and erasing nodes, shifting nodes, etc.) and their distribution are associated with the resultant HT structures.

Clara *Mancini* (Open University, Milton Keynes, UK) made comparisons between the narrative tools available to movies and the units possible in hypertext, recognizing montage as one of the common principles. She recommends that the more highly developed language of movies be studied for HT design.

The likely development of the expense in developing an HT application can be found out in the course of the process, but best at the very beginning. On the basis of projects of second-term students of computer science, Emilia *Mendes* (Auckland University, New Zealand; co-author Wendy *Hall*, Southampton) studied an approach of "estimation by analogy," i.e., they compared the project to be estimated with a very similar project and the development expense it had entailed. Inexperienced students were found, *inter alia*, to use for their assessment mainly the number of links and the structure chosen (sequential, hierarchical, network-like).

Moritz *Neumüller* (Linz) presented a semiotic analysis of "iMarketing Tools," inquiring what rapidly developing commercialization implied for the world of symbols if, e.g., a user reading a Web page was covertly supplied with different signs by means of so-called "link injection." The case described referred to a discussion list in which a

participant said he and his fiancée still required "visa" for an entry to the USA. However, that term had obviously been sold to the card organization of the same name, and clicking on at this point produced the home page of the company instead of, as could have been taken from the context, offering any helpful advice on how to apply for a visa.

The session was finished with the contribution by Christine *Boese*, whose main argument was mentioned above in the review of the panel about "Publishing Issues." It was quite fitting in this context that she was required, in order to ensure accessibility of her work, to buy a URL at her own expense. In this way, she managed to save her hypertext form; had she submitted her contribution to the ACM meeting as a hypertext, she would not have been accepted, as Jim *Rosenberg* added ironically.

7. Reading and Interaction

This section, which occupied a central position on Friday afternoon, dealt with "Reading and Interaction," a subject constituting the core of HT reading. More detailed mention will be made below of the contribution by Jane *Douglas*, while the other two contributions will be characterized only briefly.

Insiders know that Jane Yellowlees *Douglas* was honored by a small monument in "Afternoon" for her particularly attentive and successful reading. Her own "hypertext fiction," "I Have Said Nothing," was accepted in the Norton anthology of postmodern American literature in 1998. Her topic in San Antonio was "The Pleasure Principle: Immersion, Engagement, Flow." She presented her argument using schema theory approaches of the kind also used in cognition psychology as well as in artificial intelligence research. A schema is a pattern of expectation indicating more or less accurately what something has to look like, how to order in a restaurant, or the design of a detective story. So-called "genre fiction" (love stories, mysteries, Western movies, science fiction, etc.) follows such schemas relatively closely, which is why we have no particular problems in following the respective story or understanding the way the characters act. According to Douglas, current opinion was like this (Proceedings, p. 154):

"The pleasures of *immersion* stem from our being completely absorbed within the ebb and flow of a familiar narrative schema. The pleasures of *engagement* tend to come from our ability to recognize a work's overturning or conjoining conflicting schemas from a perspective outside the text, our perspective removed from any single schema." If HT now adds the interaction principle, how do these two patterns of experience change? This is the key issue studied by Douglas.

On the basis of numerous examples taken both from hypertext literature and from movies and video games, she shows that a simple contrast of "immersion" and "engagement," between immediate experience and deliberate cognitive analysis of a text or a film, will not meet the issue. Instead, there are transitions between "immersion" and "engagement," and experiences of flow are possible in both situations (p. 158): "So immersion and engagement are neither mutually exclusive properties nor polar opposites, despite the assumptions and assertions of most critics." True, she also admits that, in hypertext literature, the lack of familiar schemas, the issue of freedom of choice, and the post-modern type of narration ensure that these texts require more of a critical review than immersion-type experiences (p. 157): "What makes hypertext fiction doubly engaging is its setting of what are mainly postmodern narratives - fractured, disruptive, ironic - within interfaces that are also idiosyncratic."

For a text psychologist of the action theoretical school, the question that would come to mind is how to embed interaction into patterns of tasks and action so that, in one case, more the immersion type while, in the other case, more the distancing patterns of experience will occur, and which concepts of control and attribution theory would be able to elucidate these interactions.

Robert *Kendall* (New School University, New York) and Jean-Hugues *Réty* (Université de Paris Sud), in their contribution about "Toward an Organic Hypertext," not only told these cognitive, mental, reception-immanent effects of the kind traced by *Douglas* with a sure hand, but in addition covered a new type of relationship between interaction and reading. For some time already, they have worked on an adaptive hypertext writing environment they refer to as "Connection System." This is to allow the author more possibilities of structuring and presentation, while leaving the reader (in their case, all readers are female) more control to be exerted over what has already been read and what still needs to be read. This is an approach highly to be welcomed at any rate.

In its simplest form, such function may consist of signaling to the reader, by different shades of color of the links, which regions were already read intensively and which ones hardly at all (I have drawn attention to this feature when referring to the HT readings above). However, this basically approaches a development in which electronic books (which may also be hypertexts) are programmed so that they refuse to be read, or so that they continually open pages and nodes which the user model implemented presents to the reader, while the reader had something quite different in mind. That the cognitive assumptions about clicking = reading = understanding are highly problematic, is known to the speakers; however, in my impression, they are still too much caught up in their obsession to advance their system. This development will have to be monitored further.

A different kind of interaction between "reading and interaction" is involved in the contribution by Gene *Golovchinsky* and Catherine C. *Marshall* (both FX Palo Alto Laboratory), who (together with Elli Mylonas) gave the tutorial about "eBooks." The system they presented, and which they use for their experiments, Xlibris, may be described as a software-based eBook variant (in contradistinction to the hardware-based forms of the Rocket eBook type). At the same time, however, very different input techniques are involved, which also implies new possibilities of interaction, "free form digital ink annotations." In this way, interactive reading does not assume the form of a "point-and-click interactivity" (based on elective actions), but marked spots in the text or handwritten annotations (i.e. manipulative actions) become inputs for the search engine in an attempt to provide the next fitting text section. This also blurs the difference between "link" and "retrieval". The material base in this case was a hypertext jointly written by Judy *Malloy* and Cathy *Marshall*, which exists in a browser format, a story space, and in this Xlibris format. Did we really need the advent of such interfaces, which encourage active interventions, in order to allow readers to play the part of collaborators in a literary work, a function claimed early on but, by necessity, remained an illusion in view of hypertexts secluded from the reader?

8. The Concluding Paper

The concluding paper by Jonathan *Grudin*, for the past two years with Microsoft Research, dealt with "Irresistible Forces and Immovable Objects." The "forces" referred to technologies and their development, while the "objects" were people. His key statement is summarized in the abstract of his paper (which is the only text existing in the Proceedings) in this way: "I am of the persuasion that the Web and wireless technologies are 'irresistible forces' that will merge and transform the world more than all but a handful of past technologies. But everything is possible. The most immovable of objects is human biology..."

In a way, *Grudin* connected up with central statements of his presentation in 1996, which I mentioned initially. The results he explained then about handling electronic diaries indicated how new technology added different structures to the visibility of information (in this case, dates of appointments, etc.), and also led to different patterns of behavior. In this paper, in which retraced important stages and factors showing how "scholarship" is changing in times of the Internet, he also, and primarily so, referred to this "visibility." In the same way in which neighbors did mind how I, as an owner, built and painted my house, the information presented in the Internet had to be seen: "The increased visibility has constrained the way we use our proprietary, the way how we act on our machines." When we return to a web site after some

time and no longer find it, we are forced to conclude that the person concerned had the right to remove it. However, he or she may also receive electronic mail with inquiries, and the pages removed will be renegotiated as a consequence. Technology had always both liberating and restricting forces; how they acted together (or against each other) in the long term was the decisive question.

In actual fact, *Grudin*, as he found out by initially inquiring among the audience, rather tends to feel that the technological forces play a decisive role. On a four-level scale ranging from "hard technological determinism" to "soft determinism" to "co-determinisms" (with a balance between technological and social forces), and to "non-determinism" (dominance of social control over development), he ranked himself "1.5," while the majority of the audience were more inclined towards the softer control concepts. That this point of view triggered off lengthy discussions after the presentation, was to be expected. However, this self-characterization should not be understood to imply that the author failed to recognize cultural integration and domination. Quite on the contrary, many of his examples show that he does perceive the cultural superstructure dominating technical developments. However, whether a society is truly the master of technical developments and their applications, is something which we can justly doubt along with him.