Oberhausen Film Festival - April 27, 1997

EXTENDING THE DOCUMENTARY TRADITION

Glorianna Davenport

Cinema is constantly being reinvented by young makers who boldly embrace the latest technologies while bearing minimal allegiance to the aesthetic conventions of the past. This process makes the technology of cinema remarkably robust in comparison to the fragility and "datedness" of cinematic images themselves, whose specific content, composition, and physical condition speak to us of times past.

Documentary recordings come in all sizes and shapes: observation of events; portraits of personalities, known and unknown; portraits of place; streams of visual consciousness told by filmmakers about their own lives and the lives of others. Documentary recordings which physically survive the ravages of time are nonetheless conceptually transformed by the ever-shifting currents of human knowledge, fashion, and temporal experience.

Electronic cinema cannot truly alter the ephemeral nature of the recorded image; however, it can provide new and satisfying ways to make, re-use, perceive, and otherwise engage with cinematic content. For the past two decades, we at the Media Lab have been building systems which support the emergence of new narrative processes in which the author(s), a networked presentation system, and the audience actively collaborate in the co-construction of meaning. The experience of story occurs as we cognitively process a stream of images and associations over time. By augmenting this experience with systems in which the computer mediates our acts of perception and learning, our very notion of story itself is refined and re-defined.

In creating a new storytelling system, the author must grapple with how to organize a substantial body of material -- as well as how to intuitively and non-intrusively cue the receiver about interactive possibilities -- so that the story experience will appear coherent and enjoyable during playout. Much of our work in digitally-enhanced documentary has been inspired by the potential of two basic

organizational models: navigation through physical or conceptual geographies, and the give-and-take of human conversation. As Nicholas Negroponte wrote in 1979: a "navigational movie" has "an external network of controls upon which information is placed like flesh on bones or buildings in streets," while the "conversational movie" is built around an internal or conceptual network which "can be as simple or complex as one wishes to imagine."

Over the past two decades, many authors of electronic cinema have played with these models. The Aspen Movie-Map project (made in 1979-1981 by MIT's Architecture Machine Group) presents the most literal implementation of a navigational movie. Inspired by flight simulator technologies, the navigational portions of "Aspen" were shot frame-by-frame on all streets in all directions and on all turns.

The viewer "drove" through the streets using a joystick or button-box; the system stitched together the appropriate frames of imagery to offer a good visual approximation of "being there." Only when the viewer pressed the "stop" button and touched a building did the navigational model transition to the conversational model. Upon performing this action, the viewer might be transported inside the building to meet the police chief or to watch an act of conspicuous consumption playing out in an expensive clothing store.

Today, a new Media Lab project -- "the World Wide Movie Map" -- is revisiting and expanding the Aspen model to support global connectivity on the World Wide Web. Rather than limiting the construction of this map to a small community of specialists, everyone in the world is invited to contribute their own text, images, mini-movies, and other media objects. The goal is to collaboratively "grow" a world map from the ground up; as the map fills in, an individual's contribution is like a handshake launched around the world.

While the navigational model for an interactive experience is rather obvious -- it appears in virtual as well as documentary applications -- the conversational model supports a less a priori structure of associations. As a result, it is better suited for documentaries which reveal some insight into people and their daily activities. In 1982, I began a documentary film project focusing on urban change before, during, and after the New Orleans Worlds Fair. Over the next 3 years, the filmmakers (Richard Leacock and myself) returned to New Orleans 36 times. During that time, we followed five major stories

and filmed key scenes with more than 50 recurring characters. This material -- edited down from 60 hours to 3 hours for manageable publication -- became the basis of the first large-scale interactive documentary organized for a conversational model of presentation.

In observational documentary, narration and point-of-view is shaped largely by the editor's selection and sequencing of story elements. The editor can interweave particular expressions of backstory or point-of-view very precisely to help the viewer experience the nuances of how and why characters do what they do. Once such a story is constructed, it is a fixed object to be used and re-used without significant changes.

In contrast, interactive or non-linear cinema must dynamically respond to the presence and activities of the viewer. During playout, the viewer must be offered opportunities for contextual and in-depth conversation with the story materials. Some stories can only be gathered over time, growing and changing as new materials are added: these extensible (or "evolving") documentaries require the construction of content- and material-handling systems which can accommodate dynamic shifts in the quantity and sequencing of story elements without obscuring narration or presenting discontinuities which would disrupt the viewing experience. In essence, these stories must be culled and edited "on-the-fly" at the very moment of playout.

At the core of every conversational "interactive" storytelling system lies a story-element selection algorithm (essentially, some approximation of the knowledge and judgment of an expert editor, embedded in software). In our systems, the author does not create specific "hard-coded" links between segments. Instead, the author builds a database of granular segments or scenes which can be retrieved as needed; then, she attaches keywords to each of these scenes (typically, the "who." "what," "where," and "when" information that journalists are so fond of -- representing the "why" and "how" of things can present thornier problems). These keyword descriptors tell the selection algorithm something about the content of each segment. In the future, digital systems may become quite good at examining streams of audiovisual data and extracting this information automatically; but currently, human "experts" are still required to perform the lion's share of analysis and annotation.

In creating an interactive or non-linear documentary, a great deal of energy goes into the design of the "user interface." The interface is the part of the system which speaks directly to the audience, standing as a mediator between them and the available story materials; it can be thought of a narrator, or at least an element in the narration. The interface is the place where the audience can put their hands on the stuff of story and bend it into whatever shape they desire. In many ways, the interface is also the most transient aspect of non-linear documentary; it will continue to change as the delivery system matures, or as the story crosses media platforms. Nonetheless, with each successive experiment, the design decisions encoded in the interface contribute to the maturing of the interactive documentary.

In the demonstration system "Contour" we place the keyword descriptors for our documentary "Boston: Renewed Vistas" in the display to illustrate how a selection algorithm works. This storyteller engine uses a spreading activation network to weight descriptors and content during the playout. This system shows how a system can playout without as well as with audience feedback.

Developed in HyperCard, "The Elastic Charles: A Hypermedia Journal" was distributed in 1989 to 100 individuals and corporations who had Macintosh systems with a video card, two monitors and an external videodisk player. Each video segment had its accompanying annotation and text card. In this magazine we presented the history and ecology of the Charles River. For the interface of content cards and links, we designed short 30 frame movie loops or micons. These digital movies predated the release of the QuickTime digital movie standard.

As the World Wide Web became visible, we began to understand that it presented a tremendous opportunity to the independent producer. Both "Jerome B. Wiesner: A Random Walk through the Twentieth Century" and "North End Chronicles" use Java as a way of encapsulating their content.

In "Jerome B. Wiesner: A Random Walk through the Twentieth Century," designer Mike Murtaugh addressed the point-and-click interactivity of World Wide Web by creating two interface elements: a concept map shows the relative state of keywords for each piece of content which is presented and the table of contents uses a spreading activation network to show relative similarity of content

elements. We continue to add materials to this "evolving documentary."

In "The North End Chronicles," Natalia Tsarkova chose to use dynamic collage as a method for guiding the viewer through various permutations of content. This visual interface maps well to Natalia's cinema verite style documentation. In creating this work, Natalia has considered a critical dilemma for non-linear cinema of the future: how can we develop an annotation method and a selection algorithm which can be sensitive to story arc?

In this way, Natalia's work brings us almost full circle to my earlier work in New Orleans. What we have today is a generic general purpose conversational storyteller system, a model for the "evolving documentary," and a delivery network which anyone can publish to. What we await is increased bandwidth on this network, a maturing of a storyteller engine which is responsive to the story arc as well as associational juxtapositions, a richer, more diverse dialog with viewers. Finally, and I mention this with trepidation, we may need to better understand and recognize the role of independent work in this medium.

Work in chronological order:

"Aspen: An Interactive Movie Map" 1979-81.

Research team: Nicholas Negroponte, Andrew Lippman, Richard Leacock, Robert Mohl, Walter Bender, Michael Naimark et al.

This interactive movie-map project invited participants to learn about an unfamiliar urban space by "traveling" around at will. The audience could "drive through" sequences of photographic footage and "helicopter above" dynamic aerial photos and reference maps. The computer system controlled the display of text and graphics as well as movies and still frame sequences which were stored on two optical video-disc players. The "driver" controlled the system using joystick or touch screen input devices.

"New Orleans Interactive" 1982-1988.

Research team: Glorianna Davenport, Richard Leacock, Brian Bradley et al.

This interactive documentary provided a case study of urban change before, during, and after the 1984 Louisiana World's Fair and Exposition in New Orleans. At one time, the system offered rapid, seamless "random access" 3 hours of video material (through a bank of 6 videodisk players) in addition to filmmaker's notes, CVs of major characters, time lines, and a large number of newspaper articles, legal summaries, and other relevant documents. In principle, the early story was designed as a case study for students of Urban Planning. The design allowed novice viewers to enjoy the benefits of an introduction, while more sophisticated viewers could begin their session by selecting a character, an event, or an issue, a time frame, or a particular document. Sequences played out based on constraints the students applied to menus. The system included simple but usable video- and text-editing tools, which allowed the students to fashion personal reports from the retrieved materials; it also allowed students and experts alike to add their own comments and annotations to the database of story materials, and blaze exploratory trails which others could follow.

"The Elastic Charles: A Hypermedia Journal" 1988-89.

Research team: Glorianna Davenport, Hans-Peter Brondmo, Alex Benenson, Vicky Bippart, Brian Bradley, Meiling Chan-Bernard, Stuart Cody, Chris Coon, Alexander Kim, Josh Kirshenbaum, Panos Kouros, Alan Lasky, Mok, Sylvain Morgain, Julie Pokorny, Joseph Vanderway, Yoyokazu Yshida.

An interactive electronic "magazine" about the history, culture and ecology of the river that divides Boston from Cambridge, "The Elastic Charles" invited the audience to be as lazy or involved as they wished. If they chose to be lazy, they could enjoy the many entertaining well-edited documentary segments. The more active participant/user could actively steer their way through the material, adding hyperlink movie markers to their wake. This project also introduced the first use of "micons" (Moving ICONS) -- postage-stamp-sized movie clips which served as representational icons on the "desktop."

"Boston: Renewed Vistas" 1995-ongoing.

Research team: Glorianna Davenport, Michael Murtaugh, Natalia Tsarkova, Michael Massey, Katrin Silberberg, Gilberte Houbart et al. with "Contour: a storyteller engine" designed by Michael Murtaugh.

"Boston: Renewed Vistas" is an ongoing, long-term "evolving documentary" project. This story examines the process and progress of urban change in downtown Boston as it endures the largest public works project currently underway in the United States. Known as "the Big Dig," this multi-billion dollar project aims to remove the existing "Central Artery" -- a massive elevated highway extension built through the downtown area in the 1950's -- while simultaneously replacing it with a huge underground tunnel. Slated for completion in the year 2000, the "Big Dig" will add many developable acres to Boston's crowded, historically significant downtown area; meanwhile, the construction process and diversion of traffic is having devastating effects on several downtown neighborhoods. We have followed this story since its inception, and plan to pursue it to its end, sometime in the next century.

"Jerome B Wiesner: A Random Walk through the Twentieth Century" 1995-1997.

Research team: Glorianna Davenport, Cheryl Morse, Michael Murtaugh, Freedom Baird, Richard Lachman, Peter Cho, Phillip Tiongson, Laughton Stanley.

This hyper-portrait introduces the audience to a remarkable man whose life centered on science, government, education, and issues of cultural humanism. Early in his career, Jerome Wiesner developed an audio recording laboratory at the Library of Congress and traveled extensively throughout America, capturing folk music by native performers. He directed MIT's Research Lab for Electronics during the Cold War, served as Science Advisor to JFK, and eventually became President of MIT. After the end of World War II, Wiesner became a prominent advocate of disarmament and was a key player in negotiating the first Nuclear Test Ban Treaty. In this hyperportrait (which runs on the World Wide Web), we invite the viewer to explore the Twentieth Century through an extensible collection of stories and recollections about and by the central figure (http://ic.www.media.mit.edu/JBW).

"The North End Chronicles" 1995-1996

Researcher: Natalia Tsarkova.

The North End Chronicles is a close-up view of an American-Italian community in the heart of Boston. Presented on the World Wide Web, it can be experienced as a collection of intimate portraits, or as a story of one neighborhood striving to preserve its identity and traditions in the rapidly changing urban world.

This project began in a popular North End cafe where local restaurateurs, unemployed actors, local personalities and various shady characters drink spiked espresso and swap stories. Later, the filmmaker moved from superficial "type" portraits to a deeper exploration of individual lives brought together by this coffee shop. Two years of shooting and editing resulted in over 60 short vignettes that can be strung like haiku into various stories.

The audience navigates these stories through a dynamic collage interface. This interface avoids the use of text and buttons. Instead, it dynamically blends images and sounds, recreating the experience of the vibrant North End streets, so unlike the modern metropolis just a mile away.

The MIT Media Laboratory

The MIT Media Lab was founded in 1985 -- largely through the efforts of Jerome Wiesner and Nicholas Negroponte -- to explore the future of computational media and digital communications. Much of our research requires the use of experimental computational devices and extraordinary input/output technologies (such as remote sensors) which we believe will become commonplace in the future. As a result, some have described the Lab as "the largest box of toys on the East Coast."

Over the years, the Lab has assembled a world-class faculty whose broad range of interests include: the previsualization, creation, and distribution of digital media objects in all forms (Film, Video, Print, Holography, Immersive Environments, etc.); Architecture; Artificial Intelligence; Computer-Assisted Aesthetics; Human-Machine

Interfaces; the co-mingling of Real and Virtual Worlds; Highly Distributed Story; Education-Related Technologies; and Image and Sound Processing.

Today, the Media Lab houses some 30 faculty and senior researchers, 120 graduate degree candidates, and another 100 undergraduates hired to work on a diverse range of research projects. It stands unique among Institute facilities in its ability to award degrees, in its policy of bringing faculty from many separate disciplines under a single roof, and in its philosophy of carrying on an extensive program of 100% industry-sponsored research. Most of the current laboratory sponsors participate in research consortia clustered around the banners: "News in the Future," "Things that Think," and "Digital Life."

The Interactive Cinema Group

The Interactive Cinema Group -- founded by Glorianna Davenport in 1988 -- explores the convergence of digital systems and cinematic story forms. The name change signaled a transition from a decades-old, internationally acclaimed documentary film school (fostered under the direction of Richard Leacock) to an academic and research program in digital media. At that time, Davenport wrote:

> "Interactive Cinema reflects the longing of cinema to become something new, something more complex and more personal, something which renders a story experience dynamically, as if in conversation with its audience."

Shaped by technological potential and student interest, research in Interactive Cinema focuses on systems which extend and enhance the expressive range of media storytelling.

Glorianna Davenport

Glorianna Davenport is the Director of the MIT Media Laboratory's Interactive Cinema Group. Trained as a documentary filmmaker, Ms. Davenport has achieved international recognition for her work in new media forms, content, and delivery systems. Her research explores fundamental issues related to the collaborative co-construction of digital media experiences, where the task of

narration is split among authors, consumers, and computer mediators. Ms. Davenport's recent work focus on the creation of customizable, personalizable storyteller systems which dynamically serve and adapt to a widely dispersed society of audience.

Ms. Davenport has taught, lectured and published internationally on the subjects of interactive multimedia and story construction. She has received many prestigious awards, including MIT's Gyorgy Kepes Fellowship Award and the Asahii Career Development Chair. She is also a consultant to several media technology and content-generation companies.