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Author(s): Alan Howard

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Hypermedia and the Future of Ethnography

Alan Howard

*Department of Anthropology
University of Hawaii*

In recent years cultural anthropologists have become increasingly self-conscious (and self-critical) about the nature of ethnography. We have been forcefully made to confront the assumptions that underlie our accounts of other peoples, and have been pressed into a “reflexive” mode. According to Marcus and Fischer (1986) we are in a period devoid of paradigmatic concurrence, a period in which “experimental ethnography” provides the platform for our most significant creative efforts. Indeed, the array of new styles for presenting ethnographic accounts is bewildering, and for those seeking comparative understandings, distressing. Given all the concern that has been expressed for finding innovative ways to more satisfactorily present ethnographic materials, it is surprising how little attention has been paid to the media through which our understandings are channeled. True, increasing effort has been put into ethnographic filmmaking in the past few years, often with remarkable results. Most of us who teach anthropology, I presume, now use films to supplement written ethnographies as a way of heightening our students’ interest by adding to the written word a more vivid, visual account. But the constraints of written ethnographies, which remain the center of our productive efforts, have largely been taken for granted. It is time, I believe, that we lay bare the limitations of the written medium itself, and take steps to remove the shackles it has imposed upon even our finest efforts. A new technology is at our disposal and we have only to seize the opportunities it provides. It goes by the name of “hypermedia,” and has revolutionary implications for ethnography.

If the constraints that book formats place on our ethnographic accounts were limiting in earlier eras, in recent times they have become even more severe. To begin with, production costs and marketing considerations have induced publishers to restrict the length of books to only a couple of hundred pages, hardly enough to include much of the data used to construct our accounts. Furthermore, this restriction has been imposed on us just as the level of complexity of ethnographic analysis has taken a quantum leap. We need more space now than ever to produce compelling accounts.

The demand that books be marketable has also led ethnographers to explore literary styles that may be suitable for mass audiences, but often at the sacrifice

of clarity and ethnographic fullness.¹ I do not mean to discredit elegant writing, but if it is at the expense of obscuring information the price is too high. The primary purpose of ethnography should be documentation. Interpretation is also vital, of course, but interpretation without adequate documentation both fails to compel and renders a work unusable for comparative purposes. In my opinion, for anthropology to lose its comparative perspective would be a fatal blow to any pretense we might make toward contributing to general theories of behavior, society or culture.

Aside from these limitations, exacerbated by a marketing mentality run rampant, the written medium itself has imposed constraints by virtue of its linear format. Writers are forced into a linear sequential mode, and are compelled to choose which aspects of a total experience are to be placed first, second, third, etc. The only way to vitalize interconnections that are nonsequential, or multi-sequential, is to refer back to previous pages. Where the connections between phenomena are as interrelated as they are in human communities, the job of orchestrating even a limited degree of interconnectivity in the written medium is a struggle at best. The situation is all the worse for a reader, who is at the mercy of an author's ability to guide him or her through the maze of possibilities. It is usually next to impossible to do one's own exploration of relationships, especially since restrictions on space make it inevitable that significant chunks of primary information be omitted. The writer of an ethnographic text is thus induced to seek prestige by selecting one path through the material and dramatizing its significance. Data that support the design are chosen for inclusion; other materials are pruned away in the interests of brevity. The reader is forced into a passive mode, dependent upon the writer's literary skills for a tour of this new territory. One is helpless to explore questions that might be of special interest to oneself, to seek other avenues of connection. And furthermore, one is summarily deprived of the richness of experience the ethnographer encountered. At most, the written word, in the hands of a true artist, can excite one's imagination, but since ethnographies are necessarily limited in scope, much of the context required for an experiential re-creation cannot be provided.

Hypermedia

The notion of hypermedia has developed in recent years within the computer industry in reference to multimedia programming that allows a user to follow a variety of pathways through nested information. Hypermedia follows in the conceptual footsteps of hypertext, which generally refers to multisequential textual organization. A reader of hypertext is constantly presented with branches of information to explore and must make a series of choices while exploring a body of information. The branches and choices are linked in multiple ways, enabling the reader to follow a variety of pathways. Hypertext is designed to be read on a computer screen interactively. It cannot be printed out without losing its basic character (Fraase 1987).

The rationale for hypertext is provided by Nelson in his seminal book on the topic. He points out that

The structure of ideas is never sequential; and, indeed, our thought processes are not very sequential either. True, only a few thoughts at a time pass across the central screen of the mind; but as you consider a thing, your thoughts crisscross it constantly, reviewing first one connection, then another. Each new idea is compared with many parts of the whole picture, or with some mental visualization of the whole picture itself. [Nelson 1987; cited in Fraase 1987:65]

Hypertext thus articulates with actual modes of thinking far better than linearly written materials. Innovation in the computer industry over the past decade has added further to the potential of multiline presentations by adding sophisticated graphics and sound to computer capabilities; hence the notion of hypermedia. All this would have meant little to the anthropologist in his office—to everyman so to speak—had not other innovations gone hand-in-hand with these electronic breakthroughs. In particular, storage capabilities have advanced to the point that ordinary desktop computers are now capable of accessing massive amounts of information, without resorting to mainframe hookups. Compact laser disk and digital tape technology soon will allow gigabytes of information to be stored on a few disks or tapes. The cost of storing information electronically is thus plummeting at the very time that the costs of publishing books are skyrocketing. Isn't it time that we anthropologists reflect on the implications of these material facts?

Consider, for example, an ethnographic account that included all the background and textual information the author used to make his inferences. Imagine being able to click on an electronic button² attached to an indigenous text, thereby activating a voice synthesizer that reproduces the speech of the individual who produced it; being able to click on a button to activate a video of a ritual performance, a dance, or the making of a canoe. One might click on the drawing of an artifact and rotate it so that it can be observed from any angle. And consider the value of maps that when clicked on reveal nested maps of smaller areas, right down to rooms in buildings; of charts that allow the reader to enter "what if" scenarios to check out the effects of a variety of conditions. The technology now exists to perform all of these functions, and it is only a matter of time—a relatively short time—before the costs will be negligible. The first low-cost hypermedia program has already been introduced for personal computers—Bill Atkinson's highly acclaimed Hypercard for the Macintosh. This groundbreaking program is based on the metaphor of filecards, each containing textual, graphic and/or audio information. While it is less than optimal for our ultimate purposes, it gives some indication of the possibilities offered us (see Goodman [1987] for a description of Hypercard and its capabilities).

Let me take a hypothetical example. A reader/viewer³ might be presented with a pictorial scene from a wedding. The picture will be part of a sequence, with each frame loaded with electronic buttons. One button will play a movie of the scene so that the reader can watch the ceremony performed, complete with audio. Having watched the movie, one could then examine the event as a series of stills, and explore the information nested under the buttons. Clicking on a button attached to a person⁴ would bring up to the screen a set of new buttons, each labeled

according to the kinds of information nested beneath it. One button might bring up the individual's genealogy, with information about how she is related to the bride and groom. Clicking on someone else's name within the genealogy might bring up options of relevance to that person, comparable to the ones that appeared when the first person's button was clicked. Another button might bring up a short biography, sketching her personal history. Within this sketch might be additional buttons leading to more detailed information, about specific roles this person plays, her achievements, responses to psychological tests, etc. Still another button might bring up a written text of things the person said during the ceremony; by clicking on specific words in the text a dictionary entry might be activated, or another button might bring up an exegesis illuminating the significance of a phrase, or other aspects of word usage. Yet another button might present an inventory of the contributions in materials and labor the person made to the event, with each item connecting to information about the nature of the items, their symbolic significance, and so on.

The last set of buttons mentioned above, those related to items of manufacture, might link up with buttons on the initial screen, those attached to material items. By clicking on these buttons we might activate a set of connections to the raw materials from which they were made, to the nature of their manufacture, to their commercial or exchange value, to the practical and ceremonial purposes they fulfill, to the means of their disposal. Each body of nested information would have its own buttons, permitting the reader to explore a variety of differential possibilities. One could go on to explore the organization of production and exchange within the society being documented, aesthetic principles of design, and symbolic meanings embodied in the artifacts—or whatever avenues of exploration the author(s) have seen fit to incorporate into their design.

The media would permit multiple relationships between textual materials and interpretation, and since so much more textual material could be included, there would be less reason to be selective. Theory would still shape ethnographies, of course, but at a broader, less constraining level. A much wider range of materials could be accommodated, including those that did not particularly interest the ethnographer but might be of central concern to some readers. One can conceive of a range of possible formats, some of which would constitute more radical departures from contemporary practice than others.

Some Possible Format Innovations

Least radical would be a text written in very much the same format as a published ethnography, but with options at points along the way allowing the reader to explore nested information in more depth. In a chapter on ecology, for example, the reader might be given the options of examining a series of maps, of bringing up additional information on geology, rainfall, flora and fauna, and so on. When finished exploring items of interest one would then return to the main text line and follow it to another point where nested information is available. The nested information could be in textual, graphic or audio form, but essentially it

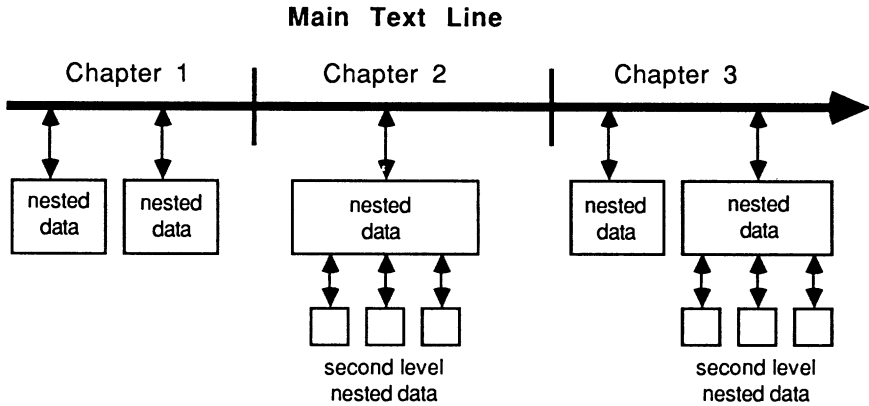


Figure 1

would be elaborations of materials contained in the main, linearly organized, account. Graphically one might represent this format as depicted in Figure 1.

The double arrows indicate that one leaves the main text line to examine nested data and then returns to it at the same point before going on.

A more radical model is one that might be structured around a central core of nested data that could be accessed from any point in the narrative. Such a central data bank might be composed of a dictionary, several sets of graphic representations, a series of digitalized sound clips, and a body of written text relevant to numerous points made in the narrative. Once in the "core area" the structure might require the reader to return to the point of entry, or more radically, might permit movement to other nodes in the core area and allow reentering the narrative at a different point from which the core was initially accessed. The latter might be graphically represented as in Figure 2.

The arrows here suggest that one might enter the core of nested data from any of several points, move between blocks of information in the core, and reenter the narrative at either the same or at a different point. This would allow the reader to backtrack in order to check interpretive points the ethnographer made earlier on, or to skip ahead in order to follow up ideas that emerge from browsing through the nested materials.

For example, extensive data descriptive of the physical environment could be included by ecologically oriented authors, and moving pictures of ceremonies, along with life histories, could be included by those whose predilections are symbolic. The point is that it will cost so much less to incorporate data that we will not have to exclude such a large segment of what we have learned in the field in order to accommodate cost-conscious publishers.

More radical still would be the removal of hierarchical structuring (i.e., chapters, subsections, paragraphs, sentences) entirely; segments could be as small or as large as the data require. Rather than being structured by chapters (as epitomized by the standard table of contents), the form of an electronic ethnography

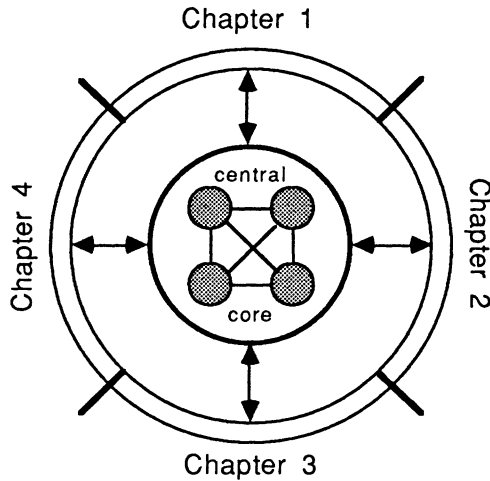


Figure 2

might be structured around elaborate indices. Readers could enter the network of information at any point and explore according to their own interests, or they could be guided through a number of prestructured pathways. The author might, for example, set up one course through the material that is chronologically ordered, another that is organized to reveal symbolic meanings, still another to reveal the impact of economic conditions on various social phenomena. Symbolic structuring might lead the reader through a network of nested symbols and associated texts. Specific symbols could be displayed in three dimensions and looked at from several points of view. Economic structuring could lead one through a nested network of information on raw materials and environment, information on production, consumption, and waste disposal. Figure 3 illustrates one way this format might be diagrammed.

Each circle represents a coherent bundle of information through which one or more designated pathways pass. The switchpoints, or buttons, associated with each bundle would presumably be labeled by the author so as to facilitate the reader's following one path or another. However the possibility would exist for the reader to switch paths at any point where multiple options exist. For example, in the midst of an economic pathway (A) one might get some ideas concerning the cultural meaning of certain items, and switch tracks temporarily. Or one might switch from macro to micro concerns as an aid to clarification.

An even more radical format would be one in which the author offered no predesignated pathways through the material, but rather invited readers to construct their own. The author would simply provide an index that would serve as a home base for accessing bundles of information. It can be diagrammed as in Figure 4.

The arrows in this instance indicate that one can go from any bundle of information to any other bundle simply by returning to the index, which provides

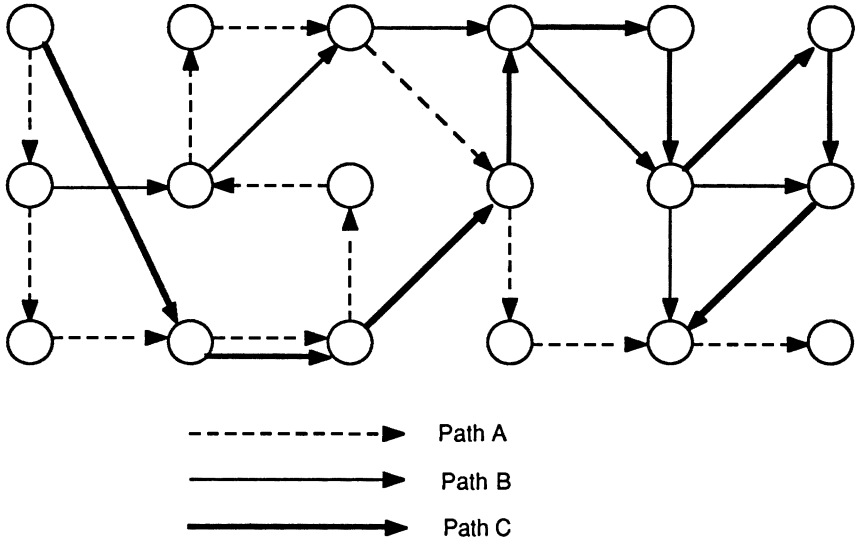


Figure 3

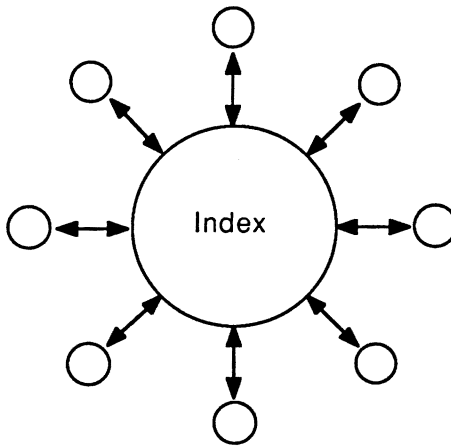


Figure 4

access buttons (and presumably labels) to all of them. Readers will then be in a position to construct their own paths through the material.

Authoring in Hypermedia

The various ways in which connectivity might be built into an ethnographic account in hypermedia will provide new opportunities for creativity. Even *within* theoretical models, multiple branching possibilities will occur, and authors will

have to choose how much guidance to provide. One possibility will be to let the reader choose between clearly designated options; another will be to create a system of "smart" pathways, in which prior choices will be recorded by the computer program and will designate future switchpoints accordingly. It is difficult to anticipate all of the ways in which an author might influence how readers wend their ways through information, but that the challenge will stimulate creative solutions is a certainty. Of perhaps greater significance, however, is the capability readers will have for programming connections of their own, for imposing their order on the materials.

In short, hypermedia has the potential for establishing an entirely new kind of relationship between authors and readers, one that is much less dependent upon an author's literary ingenuity for serving the readers' needs and goals. At first blush one might presume that these circumstances will diminish the prestige of authorship, that they will result in less intelligent, less elegant presentations. I do not think that will be the case. There will still be room in electronic ethnographies for literary eloquence, and superior wordsmiths will be every bit as likely to earn their readers' esteem (while the burdens of turgid writing will probably be reduced considerably). But hypermedia will give rise to new forms of creativity. The challenge will be to provide readers with multiple pathways based on theoretical, or perhaps more accurately, meta-theoretical, conceptions. To do this well an author will have to possess a sense of interconnectivity that is based on a theory of multistranded relationships.

The relationship between textual description and interpretation is another area that will invite creative solutions. Currently we are forced by the constraints of publication to intersperse, if not integrate, text with interpretation. Materials that are marginal to our interpretations are relegated to appendices at best, but are more often simply excluded. With the possibility of unlimited space for ethnographic information, we will be confronted with a number of options. We might attach interpretations to selected segments of the data and not to others; we might keep interpretive texts entirely separate, though joined through connecting buttons; or we might produce an overarching interpretation that stands independently, and allow the navigational pathways we construct to illustrate our points.

Hypermedia will also have revolutionary effects on the distribution of ethnographic accounts. Currently, only a small portion of ethnographic research is reflected in available publications, even if one includes unpublished dissertations that are accessible on microfilm. Electronic publishing will remove most of the constraints that currently inhibit the sharing of so much that we have learned from our fieldwork. Ethnographies could be posted on electronic bulletin boards and downloaded by modem, or alternatively, distributed on disks along with accompanying documentation. The documentation (which could also be transmitted electronically) might be in the form of a guidebook that suggests a variety of possible journeys through the ethnographic materials. It might specify alternative routes for those concerned with materialistic or psychological explanations, or still another route for those seeking symbolic interpretations. The possibilities are endless, and will challenge each author's ingenuity.

Furthermore, electronic publications will not have to assume a final, never-to-be altered form. Authors will have the option of presenting materials in changeable formats, so that they can be updated, added to, and corrected. In addition an author might perceive new connections between the data, which can be incorporated into a revised commentary. Even more radical are the possibilities for knowledgeable readers to contribute their own data or interpretations to the total corpus. At present we must rely on scattered reviews which are subject to even more constraints than other published materials (how much can one do that is illuminating within the typical 300–500 word review?). In place of reviews we might be offered a set of critiques that can be accessed along with the ethnographic materials and interpretations.

Indeed, the subjects of an ethnography themselves might be invited to submit their own responses, which also would be accessible to readers. In fact, under optimal circumstances, they could go “on line” to answer queries from a panel of interested scholars. With telecommunications and modems becoming increasingly sophisticated, setting up electronic mail capabilities in the field, wherever it might be, is a genuine possibility. This will transform ethnography from an endeavor producing fixed, static texts, to one that is continuous, and one in which we can realize the stated ideal that our subjects take on the role of active partners in research.

Thus, whereas in their literarily published form ethnographies are “closed,” in their electronic form they can be “open.”⁵ It is quite likely that some of the most exciting new ethnographies will be composite products, constructed out of information and interpretations from multiple contributors. To the extent that this vision is realized, of course, it will revolutionize the status structure of academia. The selectivity that currently operates with regard to publication—the main source of academic prestige—will be diminished in favor of a more open, and hopefully more egalitarian structure. Whether this will result in lower quality ethnographies remains to be seen, but I suspect that the “openness” of ethnographic accounts in the electronic media will lead toward a practice of progressive refinement replacing the current limiting system of write—review—rewrite—edit—publish.

Implications for Theory

Theory may be thought of as selective interconnectivity. That is, out of the total range of possible associations in a thoroughly interconnected universe, a theory chooses to single out some as particularly important for understanding a phenomenon of interest, while ignoring the rest. In the past theory has been constrained by our inability to grasp a large number of connections, and has therefore been practically limited. The inability of our minds to grasp multiple simultaneous interactions is but one constraint. Perhaps more important has been the sequential media we have been using to communicate with one another. Sequential media simply do not lend themselves to apprehending phenomena of great complexity.⁶ It is no accident, I believe, that elegant simplification has been touted as the hall-

mark of well-formulated theory. To communicate scientific understandings effectively in sequential media *requires* simplification.

Human experience, however, is anything but simple. As anthropologists we have been forced on to the horns of a disconcerting dilemma. In order to achieve the luster of polished theory we are forced to simplify, but in doing so we sacrifice the very textures that are the essence of humanness. We become cultural materialists, or structuralists, or Marxists or some other -ists. If, heaven forbid, one should choose to look at the human condition from multiple perspectives, he risks being labeled “eclectic” and condemned as “obscurantist” (Harris 1979). The advent of hypermedia may help to resolve this dilemma, or at least to mitigate the oppositions. Theory will be less constrained by linear reasoning since a multimedia nonsequential presentation can be informed by several different propositions at the same time, and can be poised to illustrate them when required.

A parallel dilemma that has confronted theorists concerns the degree to which the context of events ought to be included when seeking generalizations (Shweder 1979–1980). The more context one includes the more difficult it is to generalize; but by excluding context, the main basis for attributing meaning to events is eliminated. If we were to have available a bank of linked hypermedia ethnographies, comparative analyses would be less constrained by the necessity of making a singular choice with regard to context inclusion or exclusion. A comparative analyst might furnish several navigational paths through the data, providing more context for some purposes or generalizations than for others. In addition, readers would be able to browse at will into nested contextual information for particular cases, and will be in a position to make better-informed judgments about the credibility of generalizations (and/or ethnographic statements contained in individual accounts).

Conclusion

We stand on the threshold of a major revolution of information management, not only in anthropology, but in all of academia and beyond. It we think of anthropology as a community of sorts, in which information is shared and cultural understandings are produced primarily by written media (journals, books, manuscripts, etc.), along with occasional face-to-face encounters at meetings, then it is apparent that a radical change in the media through which we communicate is likely to have dramatic effects on the nature of our community. It is likely that in the not too distant future information-sharing communities will be defined by interconnected electronic networks with multiple nodes, or “bulletin boards.” Conferences will take place electronically (as they do already on such commercial services as *Compuserve* and *Genie*). An enormous range of data—ethnographic data in addition to other kinds—will be available for browsing or downloading into one’s own computer system. How these communities will ultimately be defined—by interest in common problems, by discipline, or some other criterion—remains to be seen, but they will surely be radically different from contemporary academic communities.

If cultural anthropology survives this transformation, and I believe it will, based on a continued core interest in ethnographic data, then we can expect the emergence of a new perspective. It will differ from previous “paradigms” that were based on the need to simplify. Rather it will be rooted in agreement with regard to how to cope with inevitable complexity, and it will be a child of this new technology. “Normal” ethnological science will focus on methods of optimizing interconnectivity, so that the human condition can be apprehended in a manner that does justice to its genuine richness.

One way to think of “an ethnography” is that it is a means by which we attempt to communicate to others the nature of our experience with, and understandings of, a group of people. Clearly the main medium we have had at our disposal in the past—sequential writing in the form of books and articles—has drastically inhibited our capacity to do this well. Our most profound experiences are usually the things we see, hear and smell.⁷ Reducing these to words that can evoke those experiences takes a literary genius few of us possess. Moving pictures help, but they, too, are limited by their sequential nature. Hypermedia may not be the ultimate answer, but it will certainly present us with an opportunity to take a major step forward.

Notes

Acknowledgments. Conversations with several colleagues contributed to the ideas upon which this article is based. Discussions with Jacob Bilmes, Robert Levy, and Bradd Shore especially stand out in my mind. Blimes, a fellow Macintosh addict, carefully read through an earlier draft and provided an array of critical comments that led to a thorough revision. The current version reflects his acute intellect in numerous ways. Finally I would like to thank Jan Rensel for reading through each draft and offering helpful suggestions about how to communicate effectively in this (alas!) still sequential mode.

¹Irving Louis Horowitz, writing about the publishing crisis in higher education, points to recent trends toward monopolization through company takeovers as having a pernicious effect on academic publishing. He writes that: “In place of longish works with careful notation systems and complex charts, the demand is for brief, easy-to-read books, in which the scholarly apparatus is severely curtailed” (1987:42).

²I use the term “button” in reference to a designated area on the viewing screen that responds to an electronic signal stimulated by placing a cursor on it and clicking a button on a keyboard or “mouse.” Since I am most familiar with Macintosh computers I use terminology appropriate to their operating systems.

³We will need a new vocabulary to describe these new relationships. I was tempted to employ “reviewer” to distinguish users of hypermedia from “readers” of sequential literature since it implies both reading and viewing, and suggests a more interactive engagement. But to substitute one limited word for another does not seem an adequate solution.

⁴The image of the person itself might be a button, or the button could be imbedded in a part of the image.

⁵They would not have to be open, of course. The possibility exists for locking electronic productions so that they cannot be altered, and in certain instances authors might well choose to take this route.

⁶This is not to say that all writings in the past have been trivial, or that all, or even most, experiences with hypermedia will be superior. However, in my view, the most profound discourse on the human experience has come from poets and novelists who are able to trigger, through metaphor and other literary devices, our unconscious tapestries of understanding.

⁷As yet smell has not been integrated into hypermedia, but it is not too far-fetched to imagine a computer controlled scent-producer that would emulate a wide range of smells. Perhaps some young computer whiz is working on the problem somewhere at this very moment.

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