The Stimmir

Study
Through
Interactive
Multi-
Media
Information
Retrieval

Reflections on a Concept

by

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"Stimmir" is a word manufactured from "Study Through Interactive Multi-Media Information Retrieval." It is not an acronym meant to stand for a particular thing or organization, like NASA or COBOL. Rather, a stimmir is a generic thing, in the same way that a book is, and "stimmir" should be used as an ordinary noun, one that has been consciously constructed with an origin that is acronymic, not etymological. Its pronunciation, should veer in the Anglo-Saxon, not Middle Eastern direction, with the accent on the first syllable. As the word becomes established in the language, its meaning secured by usage rather than by its acronymic origin, its spelling will evolve to "stimmer." But for now, we use the correct form, stimmir.

A stimmir is a collection of materials suitable for study through interactive multi-media information retrieval. In this sense, stimmirs are in the broad class of cultural products that include books, magazines, films, videos, symphonies, ballets, paintings, photos, and similar modes of creative expression. Like these, the motives served by a stimmir may range from entertainment to edification; a stimmir may excel for reasons of imagination or scholarship; it may contribute to knowledge, commerce, amusement, power, or any combination of these and other consequences. Stimmirs may in time displace books as the main vehicle for creating, transmitting, and preserving our culture. Whether they do or don't do that, stimmirs will become significant means of cultural communication.

What defines a stimmir, like a book, is its content, what the stimmir is about. Each particular stimmir, like each particular book, will have a material form, but its subject, its content, will actually determine what it is. The material form of books is variable -- some are very small, folios are very large; bindings differ, as does the paper, ink, typeface, layout, and the like. A few bibliophiles may care more that a book is bound in such and such leather, stitched in one or another way, set in an esteemed type, printed on a renowned stock, and so on, but most real readers care whether it is Jean-Jacques Rousseau's *Emile* or Voltaire's *Candide* and they would distinguish between those two works not merely by their physical attributes, but far more profoundly by their differences of substance, tone, import, scope, style, and significance. So too, stimmirs will be distinguished, one from another, according to their content, not according to the peculiar combination of technologies used in each.

One can, of course, describe the physical attributes of a typical book, and the writer needs to have these somewhat in mind as he or she sets about to create a work. We can do the same with a typical stimmir. First off, a stimmir will be a lot "bigger" than the average book, and here "bigger" really describes content more than physical size.[1] The quantity of information in a stimmir will greatly exceed the quantity of information in a book. With a stimmir, a personal computer controlling diverse mass storage devices will be like the cover, binding, and pages of a book. The typical stimmir will include an extensive collection of video and other visual materials, all of which will be carefully indexed for management with the computer. By extensive collection of visual materials, think here, not of one interactive videodisk with its half-hour of video to a side; think instead of a collection of two-hour video tapes, say fifty or more of them, each time-coded with its contents carefully indexed in a computer database. The stimmir may

1. In physical size, one stimmir will be a lot bigger (and much more complex) than a single book, but a set of books with a content equal in size to that of the single stimmir may prove to be much the bulkier.

include also lots of stills and short videos on a videodisk and recordings on compact disk or tapes -- the important part is that all be indexed and easily controllable through the computer. In addition to such a video collection, the stimmir will also include, thoroughly referenced in the same index, an extensive collection of written materials, texts, statistics, what-have-you. By extensive collection of written materials, think here, not of a single handbook; think instead of an assembiage of materials more extensive than that of the most comprehensive encyclopedias. And as with the visual materials, the key to the textual part of a stimmir will be powerful indexing so that the reader can control it for easy retrieval and intelligent navigation through it substantively.

Because stimmirs serve to sustain study, they must be extensive. Training materials are designed by circumscribing and closely defining what is to be learned and concentrating astutely on imparting those particulars. Study environments must encompass much more than any single student can master, short of becoming a renowned authority. To study a matter is to explore it, to reflect on different aspects of it, to inquire into those dimensions that peculiarly strike one's interest, to wonder about it, to be curious, to draw connections, ultimately to form views of it that are all one's own. Hence, well-designed study environments, stimmirs, should invite different people to chart unique, unfolding itineraries of inquiry through them.

> Bees pillage the flowers here and there, but they then make honey of them which is all their own; it is no longer thyme and marjoram; so the fragments borrowed from others he will transform and blend together to make a work that shall be absolutely his own; that is to say, his judgment. His education, labor, and study aim only at forming that.[2]

Stimmirs should be flowered fields to sustain such labor, and to so serve study, they need to be copious collections, less like a single text and more like a well-chosen topical library.

Fortunately, learning technologies are developing in ways that will permit such substantive expansiveness. Optical media such as CD-ROM -- "Compact Disk/Read Only Memory" -- make collections of visual and written materials on the scale requisite for study both feasible and economic. The developmental task, however, is not primarily a hardware problem, but a task of creative cultural innovation. CD-ROM, or whatever optical storage technology becomes commonplace, will be a crucial hardware component of most all stimmirs, but the cultural power of stimmirs will arise because through them we will be able to index ideas and information more fruitfully for thoughtful retrieval than has hitherto been possible. Essentially, a stimmir will reference in a single computerized index a comprehensive collection of material stored in many media -- written, audio, visual -- and it will allow the user to interact with those media, retrieving ideas and information from all of them, according to the play of his or her curiosity: study through interactive multi-media information retrieval. Organizing thought so that it can be so studied: that is the developmental task.

New technologies develop through working examples. What we have now

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2. Michel de Montaigne, "Of the Education of Children", Montaigne: Selected Essays, Blanchard Bates, ed., New York: The Modern Library, 1949, p. 22. My distinction between study and instruction is developed at greater length in my essay "Toward a Place for Study in a World of Instruction", Teachers College Record, Vol 73, No. 2, (December 1971), pp. 161-205.

is a prototype, an indication of what we want to develop, but something that we have had to put together from available components. Consequently, the prototype lacks some of the features we expect fully developed stimmirs to possess. All the same It is a prototype, sufficient to give a feel for the concept, the idea of a stimmir. Having linked existing materials in such a way that we have made a prototype stimmir, with that experience to draw from we are proceeding to plan several more fully developed stimmlrs, one on infancy, one on American history, and a third for educating teachers.

What have we done with the prototype? It consists in linking, as closely as we can under computer control, two major textual and video resources that have recently come on the market -- the *Grolier Electronic Encyclopedia* and the *Video Encyclopedia of the 20th Century*. The linkage that we have been able to attain is close, but far from satisfactory. It is actually less a linkage than it is a juxtaposition. The problem here is that the *Grolier Electronic Encyclopedia*, one of the earliest CD-ROM applications on the market, is an entirely self-contained, black-box program. One runs it from DOS as is or not at all. One can imagine such a program and resource functioning as a memory resident program as part of a stimmir, there ready to be accessed whenever one wants some factual information about this or that. We have simulated such memory residence by using the program *Double Dos* to enable us to switch in and out of running programs almost as quickly.

We have been able to do a lot more with the *Video Encyclopedia of the 20th Century*, although, from the point of view of a stimmir, a lot more needs to be done with it. It comes in the form of 75 one-hour video tapes, accompanied by a volume of indexes and four volumes of fact sheets. As part of a joint study project with CEL Educational Resources, the creators of the *Video Encyclopedia*, we have transferred the indexes into machine-readable form and are in the process of converting the fact sheets as well. All this material is going into a large database we have designed that presently permits keyed searches and eventually to permit full-text retrieval on the material in the fact sheets. In addition, we have put timecode on the tapes consisting of both tape and frame identifiers and we have converted the references in the computerized indexes to these forms. Consequently, the database can output instructions directly to a VCR so that virtually all the management of the tapes is done automatically.

In implementing this prototype design, we have realized a number of interesting things about the technology. A stimmir can easily have a videodisk as a component of it, and as a repository of still images for a stimmir it would be an invaluable component. For the foreseeable future, however, costs dictate a major place for interactive videotape as a component of a stimmir. Volume sales for separate stimmirs will not be terribly high and the mastering costs of videodisks will remain substantial. With only half an hour to a side on a CAV disk, the only kind with a real gain in interactivity relative to videotape, the user of a large collection would be spending considerable time changing disks, as he or she would be changing tapes, and videodisk has no advantage of ease or speed in this aspect of the process in comparison with videotape. The production of a videotape, however, does not require a mastering process, which currently runs about $2000 per videodisk. If the stimmir collection consists of a hundred hours of video, not much, all things considered, the capital needed up-front to defray the mastering to put it all on videodisk would be substantial, some $200,000 more than what the resource on

videotape would cost. This consideration has suggested to us that videotape will be a significant part of stimmirs for some time to come.

Having decided that videotape has a significant future in interactive, multi-media study environments, we been considering how to optimize them for interactive use. Timecode has traditionally been primarily a feature of video production, useful in facilitating the editing process. It is essential, however, if one is to put video presentation under computer control. As soon as one tackles this process, one begins to realize that, Marshall McLuhan notwithstanding, our experience of fiim and video has usually been thoroughly linear. Tapes reverse wind to the beginning, ready to play forward from beginning to end. With a computer controlled tape, timecoded for random access, this is thoroughly irrational: we have made our rewind commands seek the midpoint, immediately cutting average access time in half. Still tape handiing is a delay taking out one, inserting another, letting the computer seek the designated spot. Is it an objectionable delay? That depends on the measure of comparison. If a stimmir is like a personal library, the delay is no more, perhaps a bit less, than that incurred in pursuing a reference to a book you know you have and are pretty sure whereabouts it is shelved.

With our prototype linking the *Grolier Electronic Encyclopedia* and the *Video Encyclopedia of the 20th Century*, the main drawback involves content. As one may include an encyclopedia in a personal library, so may both these encyclopedias be included within a fully developed stimmir. But few people make their personal libraries consist of an encyclopedia or two; one might even say that families whose libraries are restricted to encyclopedias are families without serious readers in them. Consequently, substantively there is something not quite satisfying about our prototype. One can engage in interactive multi-media information retrieval with it, but the information retrieved is uneven and lacking in depth, something that should not be the case with a properly developed stimmir. The main challenge in carrying through with the development of the concept is one, neither of hardware engineering nor of software engineering, but of drawing together multimedia materials that are of sufficient intellectual depth and quality to make the stimmir containing them the delivery mechanism for intellectual experiences that will have great meaning to people and that they could acquire only thorough this medium, not through another.

All sorts of stimmirs might be imagined, combining video, audio, stills, and text, all controlled through a common, shared index. I could close by sketching in imagination a few such prospective stimmirs. Instead, i'd like to do something similar, something that can serve the same function although it would start off from something somewhat more familiar. Let us imagine a book, a book about the stimmir, a survey of the concept trying to place it in the history of communication and trying to concretize it with sufficient examples to give the concept a bit of substance. Here is a description of such a book, one based on our experience with the idea so far, one that might, in describing the stimmir, amount to an interesting essay on the cultural uses of technology.

The Stimmir, An Imaginary Book

1. **The Stimmir: An Introduction to the Thing Itself.** In this chapter one would describe what a stimmir is and contrast it to other forms of presenting ideas and information. Central themes of the whole book would be introduced here, especially the importance of random-access to addressed information, something that the stimmir, as an intellectual tool, will greatly enhance.

2. **The Stimmir in Historical Perspective.** In this chapter one would reflect on parallels between the emergence of the stimmir and the emergence of the printed book. One would explain that culturally significant innovation can take place quite rapidly on the level of hardware, but only much more slowly with respect to the process of disclosing its substantive cultural significance. To develop the stimmir, what we need are not astounding technical novelties, but intellectually significant substantive achievements with the technologies.

3. **A Prototype: Putting the Available Pieces Together.** In this chapter one would describe a prototype stimmir created by putting the *Visual Encyclopedia of America*, 75 hours of film and video news footage, under computer control, with its index and fact sheets in a large computer database, with all that linked to the Grolier *American Encyclopedia* on CD-ROM in an information field that the user can explore as a single, unified domain. In the course of describing the prototype, one would begin to indicate how the intellectual experience of study through interactive multi-media information retrieval may differ from other forms of study.

4. **Infants and Parents.** In this chapter one would describe a joint project at Teachers College between the Institute for Learning Technologies and the Center for Infants and Parents to develop a stimmir that would help advance our knowledge of early childhood. Usually, people treat the problem of indexing visual materials as one of going from text-grounded concept to the appropriate visual material that would illustrate the context. In this project, the problem is being reversed with the visual material in video being used, not only to illustrate concepts presented through text, but more centrally as the referencing index itself so that the user can look-up text stored on a CD-ROM by pointing to things shown happening on computer-controlled video tape without necessarily knowing anything about the specialized terminologies used to describe the phenomena.

5. **American Experiences.** In this chapter one would describe an effort getting under way to create, using the stimmir, a genre of historical discourse, different from, but analogous to, the historical monograph or journal article. How might stimmirs be used to create a decentralized, multi-centered system of coherent discourse, with a diverse range of creative contributors and thoughtful consumers, one similar in scale and complexity to the arena of discourse defined by the authors writing historical monographs and articles and the sum of all their readers?

6. **Inquiring Teachers.** In this chapter, one would discuss the difference between training and study and show how interactive media organized to train people differ from stimmirs that have been organized to promote open-ended study. Here a project for a stimmir to be used in the education of

teachers would be presented, and one would reflect on how the mode of applying knowledge to practice implicit in it differs from the modes of application inherent in traditional teacher-training.

7. **Costs and Benefits.** In this chapter, one would discuss the costs of stimmirs, indicating that they are substantial but not prohibitive. One would indicate certain parallels with respect to the cost-benefit curves to the shift from manuscript to printed book. Over-all, one would argue, the decision to make the investment of cultural energy would turn less on pure economics than it would on the substantive cultural fruits that accompany the early efforts to create stimmirs.

8. **The Politics of Cultural Innovation.** In this chapter, one would reflect on politics in the ancient sense, the pursuit of the good life, or the attempt to define and achieve, through conflict and cooperation, purposes that those who participate have judged would be worth their efforts. In this sense, cultural innovation should be political and one would close by describing what the political implications of a culture of stimmirs would be.

Such a book, were it ever written, should amount to a high-level case for full use of the emerging interactive, multi-media technologies in education. It would present one partlcular vision of how CD-ROM/CD-I technologies can be best used, and readers would come away from the work not only with a clear sense of how these technologies can be used, but also of why it may be important to use them in these ways. Stimmirs are feasible cultural tools and the time is at hand to move from prototype to actuality.