

Robert Stein

2591 Military Avenue Los Angeles, CA 90064 (213) 473-1485

July 1, 1981

Rod Daynes
Videodisc Design/ Production Group
1800 N. 33rd St.
Lincoln, NE 68503

Dear Rod:

As you will see the thoughts below are only partially formed and still in need of nurturing so I have decided to put them into the body of a letter rather than in a more formal presentation.

Until the arrival of the videodisc, books have been the all-round best media for disseminating knowledge. They're relatively cheap, portable, have the capacity for detailed illustrations (albeit two-dimensional and static), and allow the user to access the material at the rate and in the order that he/she finds most useful. (Educational) Films which have the tremendous power of motion pictures and sound have never eclipsed books in the marketplace, especially the consumer market, because of the price, difficulty of use, and more importantly because their linear nature, which predetermines both the rate and sequence of presentation, weakens their value as a primary learning tool. (Videotapes overcome some of these problems to a certain extent, which accounts for the growing use of videotape in all sorts of educational ventures.) Microcomputers, which share the user-controlled access feature of books (actually with computers it is qualitatively faster and more precise) have one serious disadvantage in comparison with books which is the absence of high resolution photographic images. On the other hand, computers have two big advantages. First, when tied into a large time-sharing network, they have a much larger data-base than an individual or even a school system could afford to duplicate in printed form, and furthermore, the data base can be continuously updated. Secondly, computers allow for full user interactivity, where the medium actually tailors its output to the specific requirements and/or input of the user.

Videodiscs, particularly when they are computer-driven, promise to merge the very best aspects of these three media - books, motion pictures, and computers, thereby putting vast amounts of high quality, useful information into people's hands. For many years now there has been a gap, felt especially in the area of education, between the static, dry presentation of material in a book and the high production-value, zingy productions on color TV and in computer arcade games etc. Computer driven videodiscs will enable us to produce educational tools with the visual and auditory power of a film and the responsiveness of a computer.

The Videodisc + computer (or perhaps more correctly the computer + videodisc) puts it all together. As such, it is the first (complex) medium to come down the pike which will be able to overtake the printed book as the most preferred (not necessarily most widely used) transmitter of knowledge. Any major publisher that wants to be more than a shell of its former self 10 years from now, must deal with this and decide how to get on the train (perhaps spaceship is more apt). The Britannica, though it is slower than some, has recognized this and with what for the moment appears to be a fair amount of decisiveness and enthusiasm has hired us to help them decide how and when to enter the market.

The heart of our work will be to make specific recommendations for the Britannica's initial programming efforts. The Britannica itself has identified the general area of these efforts. While I think it behooves us to decide for ourselves if those areas are in the right direction or not, our main responsibility is to provide a lively description of the proposed programs, explaining what they would look like, how they would work and why they would be an advance over previous efforts. Each program must be tied to a specific hardware configuration(s), the choice of which must be both realistic (the hardware has to be in the market the programs are produced for) and appropriate in terms of the aims of the particular program etc. Also, we are to supply an assessment of costs and a recommendation as to how the production should be organized -- what should be done in house, what out, and how should the various factors be coordinated etc. The key question in this is how do you enable the Britannica to maintain overall editorial control while still giving a modicum of creative responsibility to whatever production co. produces and assembles the actual programs. The answer to this may be quite different for one-shot programs like "The Encyclopedia Britannica Presents" and the preparation of a fully electronic encyclopedia.

For many of the proposed programs we will have to discuss the feasibility of producing a linear presentation of the material for use on broadcast TV or for sale on videotape.

Although what I just described will be the heart of our report, in so far as that's what we've been hired to come up with recommendations on, we are going to have to do some general investigation first if the recommendations are to be grounded in reality. This general investigation needs to proceed along two lines. The first has to do with hardware. What configurations does it make sense to design for? Since we're talking about both very short-term projects which could get to the market within a year or two and long-term projects like Compton's Encyclopedia which are at least 5-7 years away, this becomes a very tricky proposition. We are going to have to figure out not only what hardware will be in the marketplace 1, 3, 5, 7 and 10 years from now, but in what numbers and in what locations (home, school, libraries etc.) I realize there is a fair amount of guess work here, but we have to strive to make the "guesses" as educated as possible, taking into account both the developments in the technology and the most intelligent market projections we can find. Frankly, the last thing I want to do is produce a pie-in-the-sky type report that recommends brilliant and imaginative projects that can only be used on hardware that will have penetrated .001% of the market when the program is completed.

The second line of investigation is into the conceptual questions related to the dissemination of knowledge generally and encyclopedias in particular. There are two big areas here. The first, how to organize material to make it most accessible and especially most useful, is quite complex. You go rapidly from what might seem to be simply an indexing problem to some thorny questions like how small can you divide up chunks of information without making it impossible to use the information in a meaningful way. For example how do you deal with the human body. Do you just put in a section on the heart, the toenail, the kidney etc. or do you have to present a concept of the whole, and if so, how do you present the parts in such a way as to give them meaning in their own right without losing sight of the whole. Obviously you're going to make countless choices based on the contradiction between presenting the forest and the trees. We need to develop a solid working understanding of this problem. Second is the whole question of interactivity. Until now a lot of the excitement around videodiscs and encyclopedias has centered on the archival

capacity of the disc - "the whole Encyclopedia Britannica on a disc" etc. I think we need to break through this and realize that the real promise of an encyclopedia on a disc lies in the interactive potential of the technology. It's by exploiting that area that we will be able to raise the presentation of knowledge to a new level, the other is just a packaging question. (For the purpose of this discussion I am using the term "interactive" to mean anything from the user's ability to make the globe rotate on the JPL disc to full, level 3 (and beyond) interactivity). To put all this in another way, the main reason we wouldn't suggest transferring the Britannica as it is to a videodisc isn't because you couldn't read it (which you couldn't) but because it would be a terrible waste of the medium. Sort of like transferring textbook material directly to a diskette for use on a micro with no graphics or anything beyond the most limited interactivity and calling it computer courseware, but worse.

In order to come up with an understanding of what a fully electronic/interactive encyclopedia would be, we're going to have to get a much sharper handle on the different types of interactivity, the subjects each is appropriate for, etc. In connection with this, we need to develop criteria for deciding with any given subject when you need full motion pictures with sound, or animation, or when in fact color stills will do. Cost will play a big role here, but we have to have a theoretical basis for deciding where to spend the money for animation, or where new live footage has to be shot to fit into an interactive framework etc.

When our work is completed, I expect we will have a report with the following chapters:

1. The application of videodiscs (and related technology) to the transmission/dissemination of knowledge in general and to encyclopedic formats in particular.
2. An analysis of current and future hardware configurations, including a clear sense of market size and description.
3. Specific project recommendations in the following areas
 - a. supplements to the existing EB
 - b. one shot presentations on the order of "The EB presents...."
 - c. a fully electronic, video encyclopedia on the order of Compton's or the Junior EB etc.
4. Other recommendations and future directions

(There may be a need for a separate discussion of the possibility and/or advisability of joint ventures, but we'll have to see. We may also want to do a separate piece analyzing the usefulness of the EBEC materials in general, apart from in conjunction with particular programs. Again we'll have to see.)

Following is a list of questions relating to the first two categories -- a real outline will have to await greater understanding. This is hardly an exhaustive list, and actually somewhat repetitive, but it should get us started in the right direction and at least be a basis for discussion.

Application of videodiscs etc. to dissemination of knowledge and encyclopedias.

1. organization of material, how to divide up, appropriate size of chunks or units of information, how small to go without losing the forest through the trees
2. historic development of encyclopedias
3. how to keep the material "up to date." what material is most prone to changing, what does this mean for the organization of material
4. what are all the useful meanings of interactivity, which are applicable in which areas
5. how to index (changes according to hardware)
6. what sorts of subjects are in most need of the various media available on a videodisc, eg. when do you need animation, when is it a toss-up. what do you do with subjects which don't lend themselves to a primarily visual presentation (besides print ie.) when you are using a highly versatile delivery system like a videodisc.
7. trade-off between using available footage (with sound) as compared to the economy gained by shooting appropriate segments at a slower speed.
8. how densely can you pack info onto a consumer, level 1 player and still have it be useful, what can be compressed and what can't.
9. if it were available how would you use compressed audio correctly.
10. how do you design your programs to be multi-level, so as to be useful to the widest audience (ie. from a ten year old to a college student), is this feasible
- 6½ assuming we can get it on the screen in a readable form how do we want to deal with text, when do we have to have it, when can it be skipped, do we want to issue print materials along with videodiscs etc., rationale for yes or no
11. Is there a place for "games" in an encyclopedia, ie. would there be a valid reason to present flags as they did on The Kidisc so that you could make a game of it.

Hardware etc.

1. overview -- information technology, what it is and where it is going
2. various configurations: videodisc alone (level 1 & 2)
videodisc + micro
videodisc + micro + network or viewdata
micro alone
micro + network or viewdata
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developments over the next 10 years, particularly in the move to refine existing technology and make it what is now known as "user friendly." touch sensitive screen, joysticks, voice actuation, future of the keyboard etc.

the development of hi-res TV, compressed audio

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3. market considerations -- which hardware configurations, in what numbers, are likely to be in the home/school/libraries a year from now - 3, 5, 7 and 10 years.
4. based on the market considerations, which hardware configurations is it reasonable to design projects for at what point in time.
5. the question of interchangeability, what it is in all its aspects, how it will change over time, how to take it into account

My sense is that we should work on these first two sections right away since a thorough job on these is the main prerequisite for carrying out our primary responsibility of making valid programming recommendations. Perhaps the best way to divide this up would be for you to take the hardware/marketing section while I take the other. That would probably use our various strengths and resources most efficiently. At the same time, we both should start some serious thinking about the particular program possibilities. A specific division of labor on these will have to wait till we get a little further along. Hopefully we could develop detailed outlines for these two sections within a month. I would like to give each other at least once weekly progress reports so we could help each other through knotty problems and perhaps get info that the other needs etc.

I trust that if you think this is all wet you will say so.

Rod,

Enclosed are various materials that I thought you might find interesting and/or useful. They are as follows:

- a letter from Charles Van D. confirming the terms of our responsibilities to the Britannica and vice versa. You and I should work out how I will send your \$ to you.
- a copy of a letter from Swanson to a man at Dartmouth who had sent Swanson an article about Dartmouth's work re: videodiscs (a copy of the article is on the reverse side of the letter).
- an in-house CONFIDENTIAL memo from J. Sloan to others at the Britannica concerning his analysis of the videotex scene and his recommendations for the Britannica's short-term involvement etc. Since this is a CONFIDENTIAL Britannica memo I think you should take care to safeguard its whereabouts etc.
- a copy of an article in a book trade periodical (sent to me by Charles Van D.) concerning the Arete "encyclopedia on a disc."
- 3 articles by a prof. at Yale, Derek de Solla Price, dealing from one direction or another with the question of the organization of knowledge. These are the most interesting of a whole batch that Charles Van D. sent me at my request.
- the foreword, editor's preface, and intro to the "circle of learning" from the Propaedia of the current edition of the Britannica + a piece on how to use the Propaedia which is really an expanded index to the rest of the Britannica, and the Table of the contents to the whole Propaedia which in its entirety runs some 779 pages.
- selected pages xeroxed from the Computer Literature Index. Someone gave me this the other day and I haven't had a chance yet to evaluate its utility, although at first glance it seems relatively authoratative.

Bob