The Annenberg/CPB Project Preliminary Application Form
Summary Fact Sheet

(Please Print or Type)

TITLE OF PROPOSAL Peabody, A Contemporary Communication Curriculum

SUBMITTING ORGANIZATION Teachers College, Columbia University

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Start Date January 1, 1986 End Date September 1, 1989

DESCRIBE, AS APPROPRIATE:

a. Technologies to be used CD-ROM computer storage, video disc, personal computers and scholar work-stations

b. Higher education problem addressed

c. Subject area(s) Communication

d. Academic level Undergraduate: upper division (e.g., lower division, upper division)

e. Number/length of programs N/A

f. Format Electronic Publishing (e.g., drama, documentary, illustrated lecture)

g. Complementary materials Computer software for intelligent indexing (e.g., textbooks, student guides, computer software)

SYNOPSIS Teachers College proposes to develop a contemporary curriculum in Communication in which all the materials needed to study the subject fully on the undergraduate level will be available through electronic storage and retrieval. We anticipate thatthe project — Peabody, A Contemporary Communication Curriculum — will take three and a half years to complete.

Work Completed To Date preliminary planning (e.g., scripts, pilot, previous research)

A Request for Funding to Support the Development of

Peabody, A Contemporary Communication Curriculum

1. Description

We propose to develop a contemporary curriculum in communication in which all the materials needed to study the subject fully on the undergraduate level will be available through electronic storage and retrieval. We make this proposal as a materials development project, but since the key technology for it, CD-ROM, is very new, the project will perforce also be a telecommunication demonstration project. The test of the new system will be its effectiveness delivering a whole curriculum, a contemporary communication curriculum, which we will call for short Peabody.[1]

"CD-ROM" stands for "Compact Disc -- Read Only Memory." It is a small disc drive that will fit inside a microcomputer. A vast capacity to store computer code and low cost make CD-ROM special. With a delicate laser beam the drive will read tightly packed binary code that has been previously etched by a more powerful laser upon a small aluminium disc. The drives will cost about $500 and have a capacity for some 540 megabytes, equivalent to 1500 ordinary floppy discs or more than 50 typical winchester drives.

With respect to the massive storage capacities of CD-ROM and related technologies, the meaning of curriculum changes slightly. We do not propose to develop a set of bounded, separate courses that aggregate into a curriculum. We leave that task to the users of what we here call "a contemporary curriculum." To us, a curriculum is not a set of courses, but a field filled with diverse intellectual works, generated by certain questions and attempted answers, bounded by a special interest in a particular kind of phenomena, in this case the phenomena of communication. Consequently, instead of creating courses, we propose to translate into forms suitable for electronic storage on CD-ROM, videodisc, and the like, and for retrieval and use through personal computers, all the substantive materials needed in the serious study of communication as a field of higher education.

In implementing Peabody, A Contemporary Communication Curriculum, we shall do the following:

- Select a full sampling of the literature on communication; organize and edit it so that it can be effectively studied on-line; and convert it into machine-readable form for dissemination on CD-ROM discs.

- Develop ancillary videodisc materials, graphical presentations, audio tracks, statistical and informational databases to illustrate and exemplify the ideas and information that should have a place in a full,

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1. After Professor Peabody with his Way-Back Machine, a TV cartoon character of the 1960's. Kermit, a major development project in computer communications located here at Columbia also foregoes an anacronymic name in favor of a TV mascot

up-to-date curriculum on communication.

- Design and implement the software needed for fully utilizing the intellectual resources included within the curriculum. This will include an intelligent indexing system that will help students find satisfactory responses to their "real" questions even though they begin with imperfectly formed queries. The software will also include a powerful program to allow readers to navigate through large texts stored in the computer without distraction from the substance of the text.

Our guiding idea in developing Peabody will be to create a curriculum that is not primarily a means of instruction, but a field for study, a domain of challenging ideas presented so that the student can find his or her way through them by self-set questioning.

2. Rationale

As a storage medium for educative purposes, videodisc has received more attention than has CD-ROM, naturally so because videodisc has been operational for much longer. As CD-ROM becomes available, some see it as a competitive medium, overlapping with videodisc. In actuality, the two storage media will complement each other, for they are functionally distinct. By itself, even when controlled by a sophisticated system such as IVIS, videodisc is limited as a curricular device. Putting the problem in simple quantities of information, we recognize that videodisc applications allot a disproportionate quantity of information to the production of video images while they have access to a comparatively limited quantity of information available to the central processing unit of the computer. Fixed and floppy discs are too small to supply sufficient text, graphics, and program code to make the video display as fully interactive as it might be. CD-ROM can correct this deficiency, making available through the computer a wealth of information, for which videodisc can then become a truly appropriate means of interactively illustrating and reinforcing the matter at hand. CD-ROM storage, thus, will likely be the form of storage that really gives the computer its oft-promised pedagogical power, becoming the data distribution device that will make it possible to actualize the educational potential of both computing and video.

Hitherto, computers have been thought of primarily as tools useful when usable in many established processes of education. When applications based on the massive storage of CD-ROM or its equivalent have matured, however, computers will have a much more fundamental presence, serving as the very locus of the curriculum and the means by which students and teachers work with knowledge. Not merely a tool in education, computers with CD-ROM should become the very place of education, and the classroom will become the site, among others, where students gain access to those computers and the educative environments they encompass.

We think that the substantial components of academic work are not courses, but fields and disciplines. Significant impacts on higher education will not emerge as instructors use new media to present this course or that course in a more memorable manner. Significant impacts will be wrought as scholars discover how to present whole fields through new media with greater

effect and illumination than was theretofore attainable.

If such reflections are sound, they indicate that a change of scale is in order in materials development projects. We aim to demonstrate the potentiality of CD-ROM to transform the scale of pedagogical innovation in higher education. Towards this end we propose a two-sided effort:

1. A curriculum development effort in higher education in which all the material that might be drawn on in the undergraduate study of communication is organized for storage and retrieval by computer and in which programmed aids that would facilitate the fruitful study of the curricular material by interested inquirers would be developed.

2. A software development effort to design and implement sophisticated, flexible user interfaces so that students will be able to make full and easy use of all the information that can be made accessible through CD-ROM or related technologies.

CD-ROM and related mass storage technologies present rather unprecedented problems and possibilities of information organization, which will have to be solved in preparing such a mass of material for effective storage and retrieval. The difficulty is not one of absolute size: much larger databases than those we will be creating already exist. The problems and possibilities lie in what might be called texture: the existing large-scale databases are generally endless aggregates of discrete data, whereas in this project what will be worked with has very substantial qualitative coherence and conceptual integrity, not NYNEX's Manhattan Telephone Directory but Kant's Critique of Pure Reason or Bateson's Steps to an Ecology of Mind. Hence, two design imperatives arise: users must be given the best resources that artificial intelligence can offer and they must be given simple fluid means for effecting, without breaking concentration on difficult matters of substance, complex navigational movements within a most extensive conceptual realm.

In scope, we would like the curricular coverage by Peabody to be reasonably encyclopedic. To achieve such coverage, we seek to develop a complete conceptual map of the field. The best conceptual map of the field that we know of is the one created by starting with the entry on "communication" in the two volumes of the Library of Congress Subject Headings, consulting the cross-references given there, and then the cross-references found in these locations, and so on to two or three levels. From time to time, as substantive work on Peabody proceeds, we shall go over the resultant list of topics to make sure that each of them receives some due space within our curriculum.

Encyclopedic scope need not run counter, however, to a conceptually powerful sense of structure. A contemporary communication curriculum will encompass everything within a field of force generated from a creative tension between quantitative information theory and qualitative interpretation of meaning through interaction and relation. We will structure our contemporary communication curriculum as an inquiry into how both the causal model of communication and the qualitative interpretation of contextual meanings in communication fruitfully apply to the full range of

communicative phenomena.

3. Innovation and Significance

Expectations that that new information technologies will have significant educational effects are often discounted with comparisons to past expectations about the potential pedagogical effects of phonographs, radio, broadcast TV, and the like. The historical record clearly offers but one example in which communication changes had fundamental pedagogical effects: the changes associated with the introduction of printing. The spread of printing utterly transformed educative practices and achievements. Why did the introduction of printing have such powerful pedagogical implications while the introduction of other communications technologies such as telephones, films, radio, and television, however great their social effects may have been, had relatively minor pedagogical effects? The answer is discernable: these later innovations left in place the basic ways in which the knowledge available to the culture was stored and retrieved whereas the spread of printing utterly transformed those means.

If the new technologies transform the basic storage and retrieval mechanisms used for the knowledge available in the culture as a whole, ineluctably those new technologies will transform education. If they leave the basic storage and retrieval mechanisms essentially unchanged, the effects of the innovations on education will not be fundamental in any significant sense. We think that the new massive memory capacities becoming available for computers provide the technical means by which the storage and retrieval mechanisms of print can and will be supplanted by electronic ones with significant transformative effects on education.

A significant innovation will be the effort to work with a full curriculum as the entity in question, not merely with a single course. Doing this is not something that would simply be nice were it done but rather something urgently important. Educational efforts tend too easily to become paternalistic, treating the student as a passive receiver of knowledge acquired by others. Where the scale of innovation is too limited, the structural bias of the situation makes designers try too minutely to control the learning outcome of the partial experience. Where learning is defined as the acquisition of precisely what was taught, the ability to think with creative rigor can be a quality inimical to the learning intended. Such structural biases can be countered by broadening the scale of instructional development, seeking to design whole curricula, not single courses, understanding a curriculum as a field of study, not as a vehicle of instruction.

Another significant innovation lies in the potential of our effort to reposition the study of communication in the current spectrum of studies. Communication is a widely studied field, but one that, as a field, has been somewhat relegated to second-tier institutions. We think that the new information technologies such as those we will be using in developing Peabody will have transformative influences in the knowledge base of our culture and that such transformative influences will, among other things, be evident in the repositioning of various intellectual domains, among them the study of communication. Such repositioning is already evident in the increasing

importance of information theory and interpretation theory in academic endeavors. A curriculum in communication will be a curriculum sought out for serious study with increasing urgency and frequency. We want to develop Peabody, A Contemporary Communication Curriculum in response to that need and demand.

4. Use

We have no specific documentation of the likelihood that Peabody, A Contemporary Communication Curriculum would be used in the many colleges that now offer students the possibility of majoring in communication, nor in the many colleges that presently do not, nor can we document predictions of use by nontraditional learners or the general public. We can, however, offer these considerations with respect to the possibilities of use by these three types of potential users.

On campuses where a course is already given, instructors sometimes resist adopting a newly designed version that one or another agency has packaged for delivery through new media, for in adopting the package the teachers would be giving up an element of their dignity as creators of the courses they offer. This resistance would not be encountered with Peabody, for what would be created would not be a packaged course, but rather a full set of resources for presenting the field, the materials for the curriculum, which different faculty members could then work from and with, creating their own courses, much as they now do with the materials in texts and library collections. The expectation, however, would be that they could now create more interesting, effective, up-to-date courses with the new kinds of materials available through Peabody than they could otherwise do. Thus we hypothesize that the resistance to adopting courseware that instructional technologists have often found in teachers will disappear when the instructional technologists turn from courseware to curriculumware with which teachers can in their turn work creatively to design their courses as they do with libraries and laboratories.

On campuses where communication is presently not a recognized field of study, the development of a complete, newly presented curriculum will probably increase the likelihood that communication will be introduced as a field of study. If it is of high quality, Peabody will draw attention to the need for inclusion of the field within the repertory of studies offered; it will counter the academic snobberies that have discouraged its inclusion; and it will facilitate instituting the field by reducing the costs associated with such a move.

Likewise, one might expect that the existence of a curriculum such as Peabody would increase the probability that nontraditional learners and members of the general public would avail themselves of the possibility of seriously studying the subject of communication. Part of the attractiveness of the effort as a telecommunication demonstration project lies in the possibility that it will radically sift the pattern of costs associated with serious intellectual inquiry. CD-ROM drives will add some $500 to the cost of personal computers; pressed discs carrying a quantity of information equivalent to more than 130 substantial books can market for $20 or less provided their price is not driven higher by extensive royalties to authors.

This much can be said: nontraditional learners and the general public would have a more managable, more economical curriculum, a fuller set of tools for serious study in the home or workplace after Peabody was developed than they would before.

5. Personnel

The Department of Communication, Computing and Technology in Education is well staffed to sponsor Peabody for it groups together specialists in software development and experts in the area of communication. In addition, Teachers College has on its faculty other communication specialists in the Departments of Family and Community Education, and Languages, Literature and the Social Studies. Various members of the professional staff from the Milbank Memorial Library, Learning Technology Services, and the Center for Computing and Information Management Services will also facilitate work on the project. With these resources we are able to draw together two working teams. One team, will specify and marshall the content of the communication curriculum while the second team is responsible for designing the video and computing programming so that users will be able to effectively study the content of that curriculum.

Curriculum Development Effort: Senior communication specialist, Louis Forsdale, is responsible for heading this effort. A professor of communication and education, Mr. Forsdale will work with Professor Robert McClintock, Chairman of the Department of Communication, Computing, and Technology in Education; Instructor Janet Skupien, and advanced doctoral students in the communication program, Janet Asteroff, Howard Budin and Amy Heebner. Also involved are Professors Paul Byers, Raymond McDermott and Herve Varenne from the Department of Family and Community Education; Professor Clifford Hill from the Department of Languages, Literature, and Social Studies in Education; and Professor Ernst Rothkopf from the Department of Human Development, Cognition and Learning.

Software Development Effort: Professors John Black, Robert McClintock and Robert Taylor will be responsible for designing and implementing flexible user interfaces so that students can have easy access to the content of the communication curriculum. Included, also, will be advanced doctoral students in the department's computing program, Brad McCormick and Steve Taylor.

6. Current Status of the Project

Only preliminary development work has been completed on Peabody, A Contemporary Communication Curriculum. With respect to the task of specifying and marshalling the curricular contents, the following preliminary work is proceeding: Robert McClintock has developed a draft content outline for the overall curriculum and circulated it for comment to other members of the design group; Janet Skupien has developed a more detailed conceptual plan for those components of the curriculum dealing with human communication in interpersonal settings and is pursuing a pilot study of how to best use interactive video to facilitate the study of such material; Herve Varenne and Paul Byers, assisted by several graduate students, have designed and produced an interactive videodisc segment for the study of synchrony in interpersonal communications settings. With respect to the task of designing the computer

and video programming necessary for the effective study of the curriculum, the following preliminary work is proceeding: John Black has laid out the basic design specifications for an intelligent indexing system for a very large data base filled with conceptually complex information, and Robert McClintock has described a program with which a reader can navigate through very large bodies of text and can manage flexibly how it is presented to the eye in the process of reading.

7. Evaluation

During development and dissemination of Peabody, A Contemporary Communication Curriculum, formative evaluation will be done through the Institute for Learning Technologies, which is being established at Teachers College with a recently received endowment. This Institute will have a Governing Board of faculty and staff members chaired by the Dean and an external Advisory Board. Both these Boards will monitor the progress of work on Peabody and regularly make suggestions for the improvement of it.

Summative evaluation of the completed curriculum will be done by a group not instututionally connected with Teachers College, but by a group of researchers that specializes in computers and telecommunications. Plans for both formative and summative evaluation will be detailed in the full proposal.

8. Rights

Rights to use Peabody, A Contemporary Communication Curriculum would be controlled by traditional copyright law. Insofar as the curriculum were used in traditional campus settings, established fair use policies would govern the reproduction of materials within it. Basically the same rights limitations would govern its use by the general public and nontraditional learners. Until fully interactive, two-way broadband telecommunications are widely operational, broadcast rights for use of the curriculum would seem to be a moot matter, but it would be expected that whatever became the common law of fair use for such media would be reserved for the benefit of Peabody.

In the creation of Peabody, much material, both textual and visual, presently under copyright will need to be used. A significant cost, in both money and time, will consist in negotiating rights to such material. Use restrictions imposed on the project through other parties may limit dissemination, although it would certainly be our intent in negotiating subsidiary rights to use existing material to keep limitations to a minimum. If either costs or limitations became excessive, we would commission the creation of new materials for the project rather than use existing materials available only with excessive exactions.

9. Distribution/Dissemination

Distributing Peabody, A Contemporary Communication Curriculum to traditional on-campus students, faculty, and administrators will be constrained by the degree to which suitable systems for studying it will be available on campuses. We think it highly probable that such systems will be commonly available on campuses in the near future and that the willingness to

use them for the delivery of integrated curricula such as Peabody will be high. Our reasoning in making this estimate is as follows: 1) courseware for delivery through interactive videodisc and related means attracts pedagogical support because it puts the student in control of a more comprehensive intellectual unit, widening the range of coherent self-paced study; 2) for an incremental additional cost in hardware of between $500 and $1,000, the means requisite for delivering curriculumware, not just courseware, can be added to such a system; 3) production costs for a full, integrated curriculum such as Peabody will be considerably lower than the combined production costs were a communication curriculum to be created piecemeal through a series of video-based courseware productions; 4) consequently it will prove, overall, cost efficient and intellectually desirable to upgrade the hardware available for courseware delivery into hardware that will put the student in control of an entire curriculum as a coherent entity.

Distributing Peabody, A Contemporary Communication Curriculum to nontraditional learners and the general public will be constrained by the degree to which systems suitable for studying it become generally accessible as consumer products. If the requisite hardware becomes commonly available, distribution of Peabody would take place through direct sales of the package and through existing networks of academic bookstores or of sale and rental centers for video cartridges and audio products. Compact discs have achieved mass distribution as audio products as have VCR's as video products. Videodisc players probably will not become widely distributed consumer products. CD-ROM drives will probably become common peripherals in personal computers, adding about $500 to the cost of a system. Thus a version of Peabody that did not require videodisc could be distributed through market channels to a public defined by households that owned VCR's and personal computers. A full version of Peabody could be made broadly available through any organization willing to make available a computer controlled videodisc player in addition to the basic system.

10. Facilities

Peabody will be developed at Teachers College, Columbia University. Most of the work will be conducted through the Department of Communication, Computing, and Technology in Education, with cooperation from other academic departments, from the Center for Computing and Information Management Services, and from the Millbank Memorial Library, especially through its Learning Technology Services. The project staff will also have full access to the library and computing resources of Columbia University. These facilities suffice for most all the facility and equipment needs for the project -- for software development, video and audio production of broadcast quality, and videodisc and CD-ROM design and mastering. In our full proposal, we will describe these facilities explicitly. One significant item of equipment will need to be acquire,: an industrial grade text scanner, which costs about $35,000 retail, for it will be esaential to convert printed text into computer code efficiently on the scale we contemplate.