

Communication Research and Graduate Information Science  
Programs: A "Hyperdisciplinary" Web

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ABSTRACT

The potential role of communication research in a graduate information science curriculum is examined. Emphasis is on whether learning can be organized in a way that leads to a reshaping of the relatedness of the communication and information science disciplines and their methods of inquiry. This reshaping could contribute to spinning a "hyperdisciplinary" web.

Introduction

An International Encyclopedia of Education article offers the following definition of interdisciplinary studies: "Interdisciplinary studies organize learning in a way that leads to a relatedness of the disciplines and their distinct methods of enquiry and verification." The Encyclopedia article goes on to state that "integrated units of study are interdisciplinary only if they use the disciplines self-consciously as exploratory tools."

This paper examines the potential role of communication research in an information science curriculum. Emphasis is on whether learning can be organized in a way that leads to a relatedness of the communication and information science disciplines and their distinct methods of inquiry and verification. The following underlying issues are discussed: (1) the need to distinguish between theoretical and applied educational tracks, (2) the difficulty of defining "communication" and "information science," (3) theory as a principle for defining disciplines, (4) needed theoretical development, (5) determinants of research methodology, and (6) the interrelationships of communication and information science with various other disciplines.

Implications for graduate programs in information science are presented, including the appropriateness of treating the nature and methodology of communication research in particular courses. Insights and examples were drawn from a pilot study

involving faculty in the Master of Library Science degree program, School of Library and Information Management (SLIM), Emporia (Kansas) State University (ESU). Full-time SLIM faculty members were asked their views on the relationship between communication and the SLIM program. Three ESU faculty members in communication were also consulted about their perception of this relationship and its possibilities. The SLIM faculty members were then asked whether they regarded as applicable to their courses the topics treated in 119 articles in approximately the last five years of Communication Research (CR). According to identified criteria, the research approach taken in the articles was noted for discussion below.

Discussion of Underlying Issues

1) The Need to Distinguish between Theoretical and Applied Tracks

Examples of professional designations for those who apply concepts in information science include "librarian" and "records manager." Examples of professional designations for those who apply concepts in communication include "journalist" and "television producer." Professional designations for professors in information science and communication departments are less apparent. Professors of information science might be called "information scientists," but a term for professors of communication may be even more difficult to establish. Peters, a professor at the University of Iowa, rejects terms like communication researcher, communication scholar, communication scientist, and communicologist. He claims that "communication has sought to create a new discipline without creating a new profession to go with it."

Theoretical and applied tracks in information science and communication can exist at the same degree levels. Master's degree programs in both communication and journalism, for example, coexist at a university. Master's degree programs in library and information management include both the discipline of information science and applications of theory to library and

information services. Undergraduate, master's, and doctoral programs devoted to the discipline of information science could be established so that students would be able to progress through the present academic degree structure. Doctoral programs in application fields already exist, including the Doctor of Library Service degree.

The ALA World Encyclopedia of Library and Information Services refers to information science itself as a profession and states that although "several conferences have tried to identify the intellectual competencies and skills needed for the profession of information science, ... the search for a structure for educational programs specifically oriented to information science continues." This structure will be difficult to determine unless theoretical and applied tracks are defined.

## 2) Difficulty of Defining "Communication" and "Information Science"

The scope of "communication" and "information science" is not readily apparent. Graduate interdisciplinary programs in these areas must necessarily combine two disciplines, neither of which is well-defined or supported by a commonly accepted theoretical base. With respect to the concept of communication, Peters states: "Communication is a word used to cover an incoherent collection of ideas, institutions, technologies, and interests. The word has tremendous capacities for Orwellian vagueness -- institutions as diverse (and similar) as the military, AT & T, and the academy make good use of it."<sup>5</sup>

With respect to the concept of information science, Greer defines this term as "the academic discipline from which the information professions derive their theoretical base."<sup>6</sup> However, Grover points out that "the concept of information science as a unified discipline is being debated, and agreement concerning its intellectual foundations is still emerging."<sup>7</sup>

Dissertation Abstracts International subsumes "information science" under "Communications and the Arts," along with architecture, cinema, fine arts, journalism, library science, mass communications, music, speech communication, and theater.

One of the primary missions of the SLIM program is to contribute toward defining and building a discipline of information science. The connotation is not limited to technological or application aspects. Rather, the term "information science" is used to connote a broadly-based intellectual discipline supportive of information transfer, which encompasses the creation, organization, dissemination, and diffusion of information.

According to the SLIM program, the following four fields comprise the emerging discipline of information science:

psychology of information, sociology of information, information engineering, and information organization management. These four fields apply theory from the disciplines of psychology, sociology, communication, management science, and others. Coherent theory development in these four fields could result in a conceptual framework for a discipline of information science.

The development of this conceptual framework was the theme of a 1987 conference sponsored by SLIM with the cooperation of the Information Institute, International Academy at Santa Barbara, held on the ESU campus. The fields of librarianship, management information systems, and information resource management were represented, and commonalities and differences were identified.<sup>8</sup>

Eisenberg's principle of "strategic ambiguity" may provide a workable approach to defining communication and information science at this stage. According to this strategy, "it is often preferable to omit purposefully contextual clues and to allow for multiple interpretations on the part of receivers."<sup>9</sup> This approach heeds Boulding's warning that "innovation which suppresses randomness ... will have a devastating impact in the long run."<sup>10</sup> Unified diversity could thus be promoted, but caution is in order that theoretical vigor be maintained.

## 3) Theory as a Principle for Defining Disciplines.

The definition of disciplines is related to theory. However, both the disciplines of communication and information science have been criticized for lacking a theoretical base. With reference to information science, Schrader states that "thinking about the terminology of a field means thinking about its theoretical domain."<sup>11</sup> With reference to communication, Peters blames institutional entities for the dilemma surrounding theory: "The problem of defining 'communication' stems from the 'paradoxical attempt to create a particular institutional entity (an academic field) out of a universalistic intellectual entity (communication) .... 'Communication' has come to be administratively, not conceptually, defined. Each department, school, or university creates the field anew in its own image. Theory fails as a principle of definition, as does the attempt to define communication as a distinct subject matter."<sup>12</sup>

Information science has received similar criticism, according to Grover and Glazier, "for its dearth of conceptually framed, creative research which has been narrowly focused, fragmented, and designed to solve situational problems."<sup>13</sup> These authors explain the relationship between theory and research as follows: "Research

first must describe accurately relationships among phenomena; it must then explain those relationships. This explanation of relationships constitutes theory."<sup>14</sup> Their proposed model for theory building displays relationships among phenomena and various levels of theory and research. The taxonomy is intended "to provide a framework for researchers and theorists to conceptualize research for building and testing theory in library and information science."<sup>15</sup>

Peters doubts whether communication is a discipline or simply a topic treated by sociologists, psychologists, historians, or even philosophers. He questions the legitimacy of independent departments for the study of a topic. A major problem this author sees is that "there is no single existing object that can unify all the interests and discourses that have grown up around the word communication."<sup>16</sup> With respect to information science, Schrader expresses similar concern: "Is the domain object to be taken as 'information'? As 'knowledge'? Or is it a broader focus that is needed?"<sup>17</sup>

#### 4) Needed Theoretical Development

Theory is needed, then, for defining communication and information science. The next question is, What kind of theory? From the point of view of information science, Wright, a professor at the School of Library and Information Sciences at Brigham Young University, states in a paraphrase of Kaplan, that "what is needed is a truly comprehensive theory of communication that integrates the realities at both ends of a wire connecting human beings to their physical and cultural environments -- a psychophysical theory that explains all of their complex interactions with both of those environments."<sup>18</sup>

Young, in his recent book, The Nature of Information, identifies a theoretical construct to guide research: "What is needed is a unified definition of information that can characterize all information-processing activities as manifestations of a single aspect of mass-energy relations."<sup>19</sup> "Patterns" are important in this perspective, according to which "the universe as a total mass-energy system will be seen to be able to exercise its creative, control, and communicative functions by manipulating forms of itself (e.g., structures, patterns, arrangements, etc.), many of which remain constant over multiple inward and outward mass-energy flows."<sup>20</sup>

From the point of view of communication, Steinfeld and Fulk identify a need for theory-grounded research in the traditional positivistic vein: "To the extent that results can be predicted a priori and explained in the context of theoretical frameworks, our confidence in the findings is enhanced."<sup>21</sup> It might be

noted that in the naturalistic paradigm as described by two social scientists, Lincoln and Guba, a priori theory is replaced by grounded theory which emerges from the data.<sup>22</sup>

Rogers and Kincaid, authors of Communication Networks: Toward a New Paradigm for Research, identify a theoretical need in the form of a network/convergence paradigm model of communication and network analysis which, like Young's proposed model, calls for breadth in scope and refers to "patterned flows": "Network analysis can display the communication structure of a system, a bigger picture of patterned flows of information-exchange."<sup>23</sup> An advantage cited for this naturalistic approach is synthesis of concepts from communication and information science: "Convergence helps move the main concern of communication research to the dialogue, to the exchange of information as the central focus."<sup>24</sup>

#### 5) Determinants of Research Methodology

A stumbling block to a relatedness of the distinct methods of inquiry and verification in communication and information science may be the assumption, where held, that the nature of the research questions and of the data to be analyzed is generally similar in both disciplines. On the contrary, data of diverse types may be gathered in various studies within each discipline, or within different stages of a single project. The editors of Communication Monographs, for example, state that all modes of scholarship, theoretical postures, and approaches to evidence and data are welcome in that publication.

Lincoln and Guba distinguish method from paradigm throughout their work, Naturalistic Inquiry, which has been used by one SLIM professor as a text in Research in Library and Information Systems. For example, the terms "naturalistic" and "positivistic" describe paradigms, whereas the terms "qualitative" and "quantitative" signify methodology.<sup>25</sup> The nature of research questions and data determines the choice of method, and no one method is preferable of itself.

However, the naturalistic mode of research "elects qualitative methods over quantitative (although not exclusively) because they are more adaptable to dealing with multiple (and less aggregatable) realities...and because qualitative methods are more sensitive to and adaptable to the many mutually shaping influences and value patterns that may be encountered."<sup>26</sup> Calls have appeared in the literature of library and information management for qualitative research as more appropriate to the complex nature of the data to be analyzed. For example, Grover and Glazier analyzed implications for the application of qualitative methods to library and information science research.<sup>27</sup>

Reports of projects conducted in the naturalistic mode have also appeared. Lashbrook, for example, conducted a qualitative case study reported in School Library Media Quarterly which investigated library media skills instruction by observing the information retrieval behaviors of fifth-grade students. Lashbrook distinguishes between the two approaches in his explanation that "the use of the term natural in an ethnographic design is in contrast to the use of the term control in an experimental design."<sup>3</sup> Theory emerged from the study in a process typical in naturalistic research: "A theory emerges as the investigator compares the data obtained in classrooms and library media centers with personal reflections as a participant observer."<sup>4</sup>

The type of research represented in approximately the last five years of Communication Research (CR) was identified. This journal, published by Sage Publications and held by the ESU William Allen White Library, was selected for analysis because its research orientation is noted in Katz's Magazines for Libraries.<sup>5</sup> CR is an international journal which publishes multidisciplinary research on communication processes and effects. Unfortunately, it is not included in indexes or abstracts that library school students generally use.

The representation of articles on interpersonal and organizational communication, it was observed, is small. However, with respect to organizational communication, CR notes that this aspect of communication will be reflected among the major areas of concentration under the change of editorship that took place in 1986. Other major journals in communication that include research reports and that could be used in information science programs to complement CR are Communication Monographs (CM), published by the Speech Communication Association, and Communication Quarterly (CQ) published by the Eastern Communication Association.

Table 1 (handout) identifies six types of research found in the 119 articles from approximately the last five years of CR. These include historical, naturalistic, positivistic, survey, essay, and meta-research. The number and percent of articles in each category is provided, along with an example of an article title assigned to each type. "Type" refers to research approach, or paradigm underlying a research approach. It is used in place of "method," which designates a particular means of gathering and analyzing data. The category "essay" is listed among the types of research for convenience; however, the essay articles consist of discussion only. The meta-research articles include discussion of research objectives, methodology, and reporting. Among them are evaluative summaries of research;

identification of research needs; and theoretical constructs, frameworks, and models for research.

Sixty percent of the articles were judged to be positivistic in approach, only eleven percent naturalistic. Judgment of positivistic and naturalistic characteristics was based on Lincoln and Guba's axioms which identify assumptions underlying these two approaches. These assumptions address whether reality is fragmentable into variables, the relationship between researcher and those involved in the research, possibilities for generalization and for distinguishing causes from effects, and the role of values in research.<sup>6</sup> Quantitative methods are characteristic of the articles in the positivistic mode, whereas qualitative methods are typical of those in the naturalistic mode.

Some interest in meta-research is reflected in the articles with fourteen percent, the second highest percentage, judged to constitute meta-research. The ten percent of essay articles consist of discussion only, which, however thoughtful, was not considered to be research. Historical studies tracing the development of a factor throughout an identified period of past time comprise three percent of the articles. The two percent of survey research articles do not include statistical manipulation of data but instead merely describe findings.

This grouping of types of research approaches taken in the articles is significant for descriptive purposes only. The range of research modes revealed by Table 1 is interesting in itself for identifying which modes are currently considered appropriate by the researchers in this group of articles. Further study of articles in various other journals is in order. However, Table 1 does not indicate the appropriateness of the research types to the questions addressed or to the nature of the data. A critical stance toward methods of inquiry and verification in communication and information science would lead more soundly to a relatedness of the disciplines than would attempts to resolve differences in approach and method.

#### 6) The Interrelationships of Communication and Information Science with Various Other Disciplines

Communication and information science are each related to other disciplines as well. Consequently, it is difficult to speak of communication and information science outside the context of "tomorrow's disciplines" which, according to Paulson, in his 1988 publication, The Noise of Culture: Literary Texts in a World of Information, "will one day appear to have been situated across, between, interspersed among, the disciplines of today."<sup>7</sup> For example, Paulson conducted a literary study that treats literature as an information

system: "By studying literature as an informational system, using a language that comes from science, we both theorize the necessity of interdisciplinarity for literary studies and begin to create the conditions for concrete interdisciplinary work."<sup>3</sup>

In another example, Rogers and Kincaid call for an interdisciplinary construction of research variables: "Communication scholars must shift to focus on communication structural variables as their main dependent variables. Then the main conceptual dimensions from other social sciences (for example, spatial variables from geography, and structural variables from sociology, political science, anthropology, and economics) become the independent variables used to explain communication structure."<sup>4</sup>

The disciplines of communication and information science could serve as catalysts in the convergence of disciplines. Beniger, a professor in the Annenberg School of Communications and Department of Sociology, University of Southern California, states that "information and communication continue to be the focus of a growing pan-disciplinary convergence of theory perhaps unprecedented since the initial separation of disciplines in the early 1800s."<sup>5</sup> Beniger cites in particular the "current keen interest of the humanities in the theory and analysis of all aspects of communication -- from encoding and transmission to decoding, interpretation, and discourse."<sup>6</sup>

Our contention is that the relatedness of communication and information science must be accomplished within a "hyperdisciplinary" framework. "Hyperdisciplinary" is a word we coined for its analogy to "hypertext." Both terms may be defined as a "way of creating and representing multiple levels and relationships of and among intellectual concepts."<sup>7</sup> Hypertext systems, a tool for "hyperdisciplinary" development, "feature machine-supported links -- both within and between documents -- that open exciting new possibilities for using the computer as a communication and thinking tool."<sup>8</sup> The thinking could proceed "on several fronts at once, developing and rejecting ideas at different levels and on different points in parallel, each idea depending on and contributing to the others."<sup>9</sup> This machine capability mirrors the type of thinking required in the development of "hyperdisciplinary" academic programs.

A particularly important aspect of hypertext development is that "the computer community now appears ready to consider its technology as much a tool for communication and augmenting the human intellect as for analysis and information processing."<sup>10</sup> We in the communication and information science academic community can apply this computer technology to the purposes of "hyperdisciplinary" development.

"Hyperdisciplinary", integrated scholarly networks await discovery and creation through the joint research efforts of scholars in communication and information science. These new human and machine communication networks would include those independent of university structures. Their development would demand openness to all possible conceptual linkages among disciplines. An ever shifting web could be fashioned with the technical assistance of hypertext, and ultimately hypermedia, systems. Traditional academic organizational structures may prove to be archaic and require change. Values relative to present academic structures may also need to be altered.

Implications for Ongoing Graduate Programs in Information Science

#### Communication and the SLIM Program

The general relationship between communication and the SLIM program was explored with the eight full-time SLIM faculty members. It should be pointed out that to date there has been no formal, calculated effort to create a linkage between the SLIM program and the discipline of communication. To some extent, this linkage has occurred without deliberate planning. The following views were held in common among the faculty: (a) Information transfer, including the creation, diffusion, and utilization of knowledge, is communication; (2) A major role of library and information managers is that of communicator; (3) The whole idea of an interdiscipline between communication and information science is exciting.

The SLIM faculty members recommended collaboration with communication departments through guest lecturers, team teaching, or a graduate-level interdepartmental seminar, such as that offered by Ohio State University in communication.<sup>11</sup> Joint course listings and faculty appointments were also recommended. Areas of identified research that could be pursued jointly include: (1) the use of intermediaries in communication; (2) communication involved in creation and diffusion of knowledge in new ways made possible by technology; and (3) network linkages that are changing the scope and nature of external relationships of organizations as well as of internal structures.

SLIM faculty members spontaneously mentioned the importance of the relation of the SLIM curriculum to other disciplines as well, especially psychology, sociology, business, and education. In sum, it appeared that they saw a piece of their SLIM courses in almost every other course in the program, as well as a relatedness of disciplines not only between information science and communication but between information science and many other disciplines.

### Interviews with ESU Professors in Communication

Interviews with three ESU professors in communication were conducted to determine their perception of the relation of communication to the graduate information science program. Although each professor seemed eager to explore the possibilities for discussing where communication and information science lines cross, it was apparent that the mission of the university influenced their thinking.

At ESU, the major thrust of the Division of Communication and Theatre Arts is to provide courses to support the general education requirements for all undergraduate students, and to offer a variety of courses for students interested in communication, speech, forensics, interpretation, and theater. The only graduate program offered by the Division leads to a Master of Arts in Teaching (MAT). Designed specifically for in-service high school teachers, it features a practical curriculum concentrating on forensics and dramatic activities. Only one graduate course emphasizes theory. On the undergraduate level, Theories of Communication and Theories of Argument are the two courses which emphasize theory.

Discussion with the communication faculty members indicated that a great deal of material germane to information science already goes into their various courses. Their research areas -- attitudes, gratifications research, attribution theory, and retention rate of information -- all relate to courses taught in SLIM. One communication division professor believes communication has as important a tie to psychology as it has to information science. Therefore, a linking of only communication and information science would fail to achieve desired results.

Communication division professors saw as a major problem the fact that professors in the two disciplines do not know enough about each other's fields. A real need was perceived for information science and communication professors to seek new angles for investigating areas of mutual concern.

Several SLIM and ESU professors urged that faculty intermingle informally to a greater extent to help avoid what one professor referred to as "cubby-hole thinking." We would add that communication would profitably extend beyond the university environment into other agencies and institutions, such as the military and A T & T. This approach would heed the warning of Rogers and Kincaid relative to the "strength of weak ties." According to this concept, heterophilous links with socially and spatially distant scholars and other individuals are "stronger" in carrying useful information than ingrown homophilous links.\*\*

### Applicability of Article Topics to SLIM Course Offerings

Following is an analysis of the relevance of the Communication Research (CR) article topics to SLIM course content. Prior to consultation with the SLIM faculty, the 119 articles reporting research or presenting meta-research discussion were examined for each issue of CR from 1984 through April 1988. The articles were read in their entirety, as required, to identify the major topic treated and to judge the suitability of the topics to regularly listed SLIM course offerings based on course descriptions, instructional objectives, and course outlines, as well as to determine the type of research represented in the studies. Potential assignment of the major topic covered in each article to SLIM courses was then confirmed through the interviews with faculty members who made necessary additions and changes.

Table 2 (handout) lists course titles, the number of topics applicable to each, a sample topic, and the number of articles on the topics. The twenty-nine courses were assigned an average of four topics reflecting an average of nine of the 119 articles. There were seventy-eight topic assignments, involving 174 articles. Some articles treated identical topics, and some topics were regarded as applicable to more than one course. The Educational Function of Libraries and Information Agencies, a course viewed as broad-based by the professor, received the highest number of articles including relevant topics (50). Information Transfer and Diffusion of Knowledge was assigned the next highest number of articles with relevant topics (40).

Other courses showing more than ten articles with relevant topics are: Research Function of Libraries and Information Agencies (23), Psychology of Information Use (19), Research in Library and Information Systems (17), Information Transfer in the Humanities (13), Information Transfer and Children (12), Library and Information Systems Management (12), and Cultural Function of Libraries and Information Agencies (11). History of Books and Printing was the only course without pertinent topics. Further exploration of the applicability of communication research results to course offerings in programs resembling the SLIM program might be worthwhile. The interdisciplinary base of the programs could be strengthened.

Although SLIM faculty members were not asked whether they presently incorporate communication research results into their courses on a systematic, documented basis, this practice would be helpful as a record of curricular development and for evaluation purposes. The concept of intellectual integrity prompts

documentation of theoretical constructs from communication research. Just as sources from which authors draw ideas are cited, so could theoretical principles from other disciplines applied to information science programs be credited, including theoretical constructs from communication.

Course instructional objectives, outlines, and lectures in the information science program are organized around fundamental concepts. Theories from other disciplines, properly cited, could be examined for how they support each concept and possibly contribute to the theoretical base of courses. The organization of course content in the graduate information science program in this manner could further inspire intellectual inquiry, assure scholarly integrity, and indicate a relatedness of the disciplines.

#### Meta-Research and the SLIM Program

Students in several SLIM courses could especially benefit from consideration of the methods of inquiry and verification in communication that build the knowledge structure of the field. In a paraphrase of Wright, the information manager's role is to negotiate the psychophysical interface between (1) the intellectual structure of knowledge, and (2) the information manager's technology of access to knowledge.<sup>22</sup> Research Function of Libraries and Information Agencies (824)--not to be confused with Research in Library and Information Systems (813)--and Information Transfer in the Social Sciences (836) are two courses that prepare students to serve scholars, including those in communication.

Further, the discipline of information science is well equipped to serve as a catalyst to the growth and reordering of other fields, including communication. In this sense, the information manager's role is metadisciplinary in fostering the creation of new knowledge and in identifying various perspectives of the same object.

Students in the SLIM seminar in Research in Library and Information Systems (813) could benefit from analyzing the relatedness of research approaches and methods between communication and information science, provided that research concepts as well as methods are treated. The historical and ongoing development of the theory base in communication would provide needed background toward understanding present realities in information science.

The research methods course might also serve to identify research needs suitable for joint investigation with researchers in communication, and proposals could be developed. Meta-research, or discussion about research, should be included so that students will understand the problems and processes of research in communication.

These could be compared with problems and processes of research in information science.

#### Summary and Conclusion

The potential role of communication research in a graduate information science curriculum was examined. Emphasis was on whether learning could be organized in a way that leads to a relatedness of the communication and information science disciplines and their methods of inquiry. The following underlying issues were discussed: (1) the need to distinguish between theoretical and applied educational tracks, (2) the difficulty of defining "communication" and "information science," (3) theory as a principle for defining disciplines, (4) needed theoretical development, (5) determinants of research methodology, and (6) the interrelationships of communication and information science with various other disciplines.

Implications for graduate programs in information science were presented, including courses that treat the research process and help prepare students to serve communication scholars. Insights and examples were drawn from a pilot study involving the School of Library and Information Management and the Division of Communication and Theatre Arts, Emporia State University. Some 120 articles from Communication Research were also analyzed for relevance of the topics treated to the SLIM curriculum and for the type of research approach represented.

Our contention is that the relatedness of communication and information science must be accomplished within a "hyperdisciplinary" framework. "Hyperdisciplinary" is a word we coined for its analogy for its analogy to "hypertext." Both terms may be defined as a "way of creating and representing multiple levels and relationships of and among intellectual concepts."<sup>23</sup> This machine capability can mirror the type of thinking required in the development of "hyperdisciplinary" academic programs and provide technical support.

As a first step toward synthesis, faculty in information science programs could identify and document the theoretical constructs and meta-research issues from communication supportive of the concepts around which their course materials and lectures are organized. Graduate programs in both communication and information science must give major attention to theory derived from research as fundamental to sound interdisciplinary development. These two disciplines would then be used "self-consciously as exploratory tools," and a reshaping of their definitions and relatedness could result. This reshaping could contribute to spinning a "hyperdisciplinary" web.

This Conference on "Communication and Information Sciences: An Emerging (Inter) Discipline?" should serve to dispel the

misgiving expressed by Beniger concerning a possibly inadequate initiative in the pan-disciplinary convergence taken by those in information and communication: "Communication scholars who chose their field in the belief that information and communication constitute the heart of all human and social phenomena, and thereby afford the most likely grounds for a major synthesis of social theory, must now confront a haunting question: What if our wildest dreams were today steadily being realized, through the labors of others in other fields, even as we continue to dream?"\*\*

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