

Suggested Domain and Structure of a
Ph.D Program in Social Communication Science

By

Klaus Krippendorff

The Annenberg School of Communications
University of Pennsylvania
Philadelphia

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Introductory note

These brief comments on and suggestions for a curriculum in social communication science were formulated in response to a conference that was planned by the Annenberg School of Communication but never held. Its task was to discuss the future of social communication as a subject of scientific inquiry and to particularly focus on how a Ph.D program in such a field should be structured.

The remarks are admittedly biased in favour of an approach to phenomena of communication that, perhaps because of its recency, has not fully been developed at this point. This bias stems from the conviction that the investigative strategies of this approach promise to be productive in the sense that they provide keys to the understanding (representation and prediction) of many communication processes in large and complex social systems. The partiality of these remarks also stems from the anticipated composition of the conference for which they were written. Regardless of their relevance in other situations, they are to be considered as suggestions that should be subjected to debate.

November 17, 1966

HISTORICAL AND DISCIPLINARY LOCATION OF A POSSIBLE DISCIPLINE OF SOCIAL COMMUNICATION SCIENCE

A. Historical Location

The history of the academic concern with social communication has yet to be written. Although the distance to such enterprises is much too short to allow for broader generalizations at this time, such a history will have to consider at least three major historical impulses. Each was responded to in a different way, resulting in typical approaches to communication which were largely exhausted when the subsequent impulses appeared. A brief sketch of these approaches may serve to locate our current concern historically.

First, in the course of the press' invasion of the traditional domain of the letters and the arts, the emergence of professional journalism became correlated with the demand for a specialized academic education. At the end of the last century the appropriate response crystallized in the form of journalism schools which were founded under the auspices of many universities. Their concern with juridical problems of the press, with the formulation of "public philosophies," and the history and professional ethic of journalism was essentially geared to legitimate such emergent enterprises and institutionalize corresponding "professional ideologies."

Second, the advent of new mass media, rapidly growing out of the hands of journalism, made this mainly educational approach quickly obsolete. Based on various and divergent ideological perspectives, mass culture criticism associated the new media with the degeneration of culture, with threats to individualism, etc. and pilloried their low educational standards, their sensationalism, their commercialism and their power of political manipulation.

The most important response to these challenges was the advent of mass media research in the late 20's. This attempt to study structures and

processes of the mass media by empirical means, started out with a focus on propaganda, the flow of influence, political and ethnic biases in the media content and on effects on audiences, and is now occupied with more latent consequences of those media in the industrial-cultural complex.

Whether as a result of the inadequacy of social research tools or of the unrealistic vision of mass media criticism, most of the popular beliefs under scrutiny turned out to be either wrong, not empirically verifiable or largely exaggerated. Most of the posed social problems could not be solved. Their multidisciplinary character had been realized but no interdisciplinary methods emerged. In particular, mass media research was unable to develop coherent theoretical frameworks of sufficient generality.

Third, the overwhelming social-organizational-engineering problems in the 40's led on the basis of new theoretical developments to the advent of cybernetics. As the science of communication and control in any possible system, cybernetics promises to integrate various approaches to communication across disciplinary lines.

The first results of this science provided not only the theoretical basis for the design of complex communication technologies and self-steering devices but also advanced such disciplines as neurophysiology and genetics, suggested new approaches in educational technology and revolutionized much of psychoanalysis as well. In the social sciences its contribution was mainly conceptual. The term "communication" found its way into the curricula of American universities. Before, it had acquired little technical meaning. The major impact of cybernetics thus far was the development of high speed computers with complex information-processing capabilities and artificial intelligence now in use in almost any sphere of social and political life.

This, and the correlated advancement of theoretical models of complex systems makes cybernetics now appear a fourth historical impulse to

which the social sciences have to formulate an adequate response. A technologically more complex society makes necessary, and an advanced scientific methodology makes possible, the formulation of novel problems of theoretical and practical significance and suggests new ways of solving them.

However the historical stages are interpreted, the current situation calls for a response from academic institutions in general and from schools of communication in particular and thus requires also a disciplinary location of such an approach.

B. Disciplinary Location

Cybernetics as a strategy for dealing with a variety of complex communication processes cuts across almost all traditional boundaries of scientific disciplines and seems to suggest a reclassification of the sciences along certain problems of inquiry. In Eastern Europe a scheme is becoming more and more prominent which attempts to make some useful distinctions between communication-oriented disciplines. This will be suggested here as a point of departure.

The scheme distinguishes, first, three major regions: artificial systems, biological systems, and social systems (including the humanities). The distinguishing criteria refer to typical theoretical and empirical problems associated with each region.

Compared with social and artificial systems, biological systems exhibit, for example, a relatively stable internal communication structure and a more definite boundary, justifying the ideal of an "organism." Such an ideal does rarely hold for social systems in which channels of communication are subject to considerable changes, often giving the appearance of arbitrariness.

Artificial systems can characteristically be taken apart and recombined to more complex aggregates with little constraint. They can, thus, be

subjected to an experimentation which is unknown to other regions. While the experimenter may control the internal organization of a social system in a fairly limited sense, such a control is almost impossible in the region of biological systems.

Besides such differentiations along the lines of theoretical models and experimental controls, the regions pose different problems of observation. Consider, for instance, the peculiar role of the social scientist as a participant and member of the system of his concern. Or, compare the observational constraints imposed on the observer of biological systems who has typically little access to its component parts, with the constraints imposed on the social scientist who can observe little more than the component parts of a society. Etc.

The scheme distinguishes, second, three modes of inquiry or typical research tasks. The axiological mode of inquiry is concerned with practical problems, with the recommendation of particular policies that determine or prescribe practical decisions according to the objective of improving the system under consideration in some well-defined way.

The scientific mode of inquiry is concerned with theoretical problems of specific systems. Its operational emphasis is on prediction within a delineable empirical domain.

The axiomatic mode of inquiry is concerned with the formal problems of all possible systems irrespective of their materiality. The operational emphasis is on formal extension. Note, this mode of inquiry cannot be imposed upon a specific region in the above-mentioned sense. Action norms typical of the axiological mode and criteria of extrospection typical of the scientific mode are at indifference for the axiomatic mode.

Each of these modes of inquiries have different ranges of problematic situations, different scopes of objectifications, different norms delineating

the sphere of aesthetic decisions, etc.

The scheme on the following page, it is hoped, clearly locates the social communication sciences in the system of other communication-oriented disciplines. It is the intersection of the scientific mode of inquiry with the region of social systems. Social communication art, on the other hand, intersects with the axiological mode of inquiry and overlaps somewhat with such disciplines as management science, regional planning, peace research, and is congruent with communications research when employed for culture-critical, or policy implementing purposes. According to the Anglo-Saxon use of the term cybernetics, it occupies the axiomatic mode of inquiry into communication and control in all possible systems.

Accepting this very general scheme as a point of departure the following section's task is to subdivide the relevant area in the diagram into topics and to suggest a fairly general outline of an instructional program toward the Ph.D. degree in social communication science.

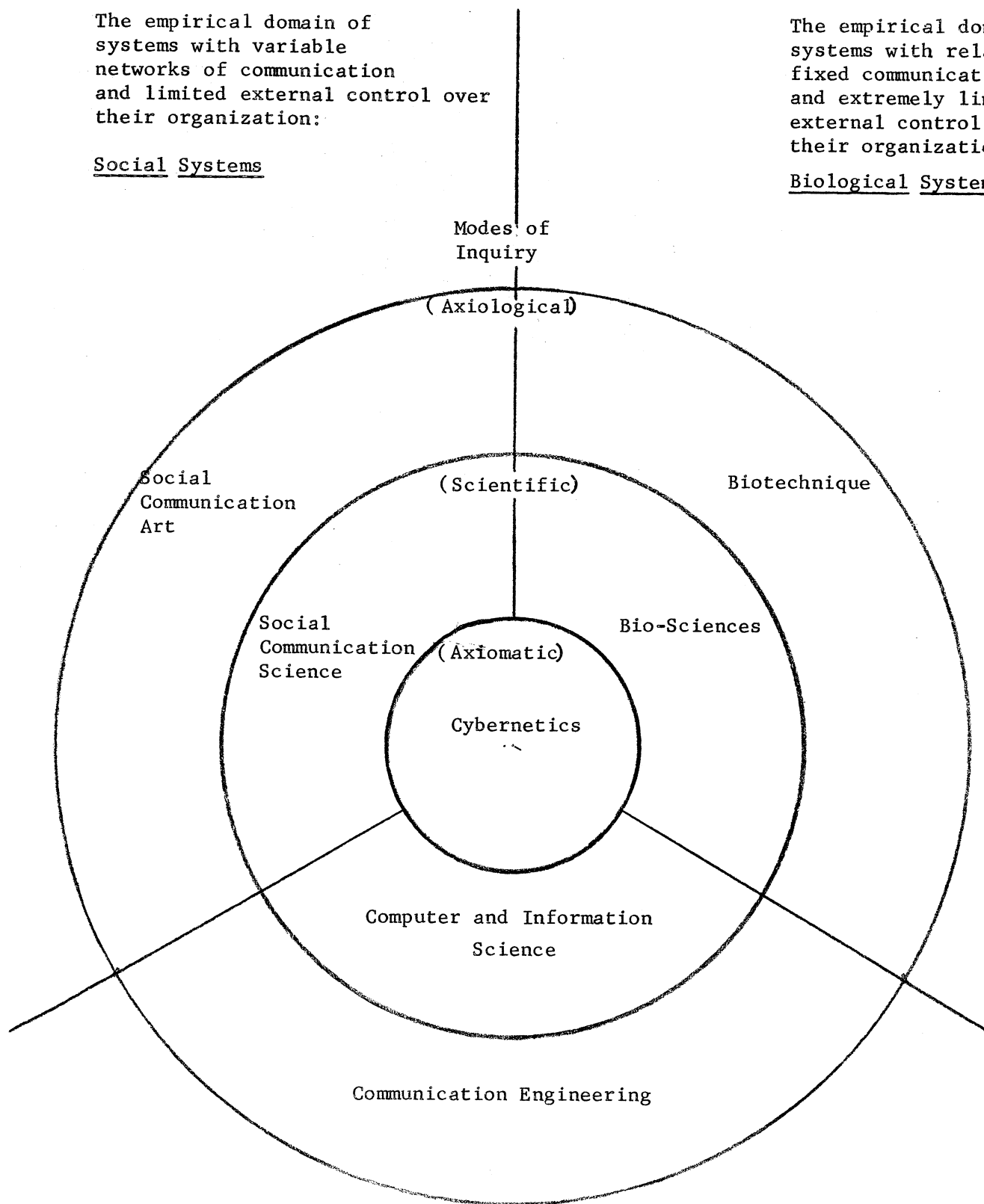
A Classification Schema for Communication Oriented Disciplines

The empirical domain of systems with variable networks of communication and limited external control over their organization:

Social Systems

The empirical domain of systems with relatively fixed communication nets and extremely limited external control over their organization:

Biological Systems



The empirical domain of systems with both, fixed and variable communication networks but nearly perfect external control of their organization:

Artificial Systems

A SUGGESTED OUTLINE FOR A CURRICULUM
IN SOCIAL COMMUNICATION SCIENCE

A. General Format

To start with some assumptions: since social communication science seems most fruitful when pursued as a problem-oriented undertaking, the focus of a curriculum toward the Ph.D. can neither be limited to a particular media, to a particular country nor to a particular social organizational form. This should be reflected in the admission policy to such a program as well as in the course offerings.

Communication is broad enough not to need a minor in an entirely different field. But it seems desirable that the student have a mature base on which his study of social communication can grow fruitfully. To ensure a concentrated study, it seems suggestive to require of a Ph.D candidate entering the program that he has already achieved some competence in an area above the baccalaureate degree. Any area should satisfy such an entry requirement provided that (1) it serves to the student as a meaningful point of departure, and (2) the student gives evidence of familiarity with the major theoretical and empirical problems in that area.

A Ph.D degree in social communication science is assumed to be an academic degree and can therefore not be concerned with axiological problems although interaction with such problems may indeed facilitate the formulation of research problems that have both, theoretical significance and practical utility.

As has been shown in the previous section, the possibility of scientific and axiomatic modes of inquiry into social communication processes is fairly recent. The topics an adequate Ph.D program in social communication science will have to cover can therefore not simply be taken from a

traditional approach but require considerable reformulation and restructuring.

Consider, for example, a course in "Mass Communication." Historically, the term "mass" was used in the course of cultural criticism and was thereby rather arbitrarily defined in accordance with professional ideologies and perspectives. Only recently such a topic seems to acquire a theoretically more fruitful meaning by understanding it to refer to social systems possessing a negligible degree of organization, permitting an adequate treatment of their properties in terms of statistical distributions, random processes, etc. (See, for example, W. McPhee's Formal Theories of Mass Behavior, A. Rapoport's work on random nets, M. DeFluer's flow of information and much of public opinion dynamics.)

Similarly, much has been written about advertising, psychological warfare, psychotherapy, etc., mainly from an axiological point of view. A Ph.D program of the kind envisaged here cannot be concerned with training specialists in such axiologically delineated areas. But it seems rather important to search for and teach the theoretical principles of manipulative communication. The study of such processes within social communication science seems justified when directed toward a general theory of -- as it may be called -- strategic control, of which advertising, human relations, political propaganda, education, etc. are specific interpretations.

The following suggested outline of topics is assumed to serve three main purposes: (1) to structure the instructional steps from the point of view of the student who may wish to exercise guided choices in pursuit of his task, to organize that knowledge which a modern instructional program in social communication science could make available; (2) from the point of view of an instructor who may want to orient his contribution in

the light of a larger framework; and (3) from the point of view of an administrator who may want to recognize possible gaps and encourage faculty members to participate in such an educational enterprise. Specific administrative requirements such as course credits, foreign language requirements, time limits, etc. are not included in the suggestion.

The suggested instructional program is envisaged here as having six conceptually distinct levels. Levels A and B refer chiefly to the axiological mode of inquiry into social communication, assumed to be directed toward the degree of master in social communication arts. Levels C and F refer to social communication science, including a few relevant topics with an axiomatic orientation, and are primarily oriented toward the Ph.D degree. To permit the interaction mentioned earlier, such a stratification should neither discourage M.A. candidates from taking courses on the C -- or even D -- level, nor hinder Ph.D candidates from contributing to the solution of problems of an axiological nature.

Level A includes workshops dealing with the acquisition of skills in handling specialized media of communication. In experimentation with the technical means of communication in the broader sense, technological possibilities are gained and practical limitations are experienced. This level may also include a research workshop in which the student learns to evaluate communications products by designing and executing appropriate research projects.

Level B includes courses providing the intellectual context for handling specialized communications media and understanding the complex communication processes in a society of which the M.A. candidate may become a participant as a professional communicator. Examples of such courses could be: history of the mass media; mass media criticism; mass media management; mass media economics; law and regulation in communication indus-

tries; policy formation in the mass media; political economy of mass communication; research methods in communications; attitude change; problems of taste, creativity, and aesthetics; social and cultural aspects of communication; etc. Aiming at applications of scientific theories of social communication for developing particular axiologies, level B offers a unique meeting ground where Master's candidates come in contact with scientific approaches, and Ph.D candidates can formulate socially relevant and theoretically significant problems for research.

Level C contains five courses which a student entering the Ph.D program is required to take within one semester. Four of these courses introduce the student to main approaches and problems in social communication, social communication science and cybernetics. They focus respectively on the nature of communication technologies, on the characteristics of messages, on the peculiarities of communication links and on the formal properties of theoretical tools, taking historical, structural, procedural or mathematical points of view:

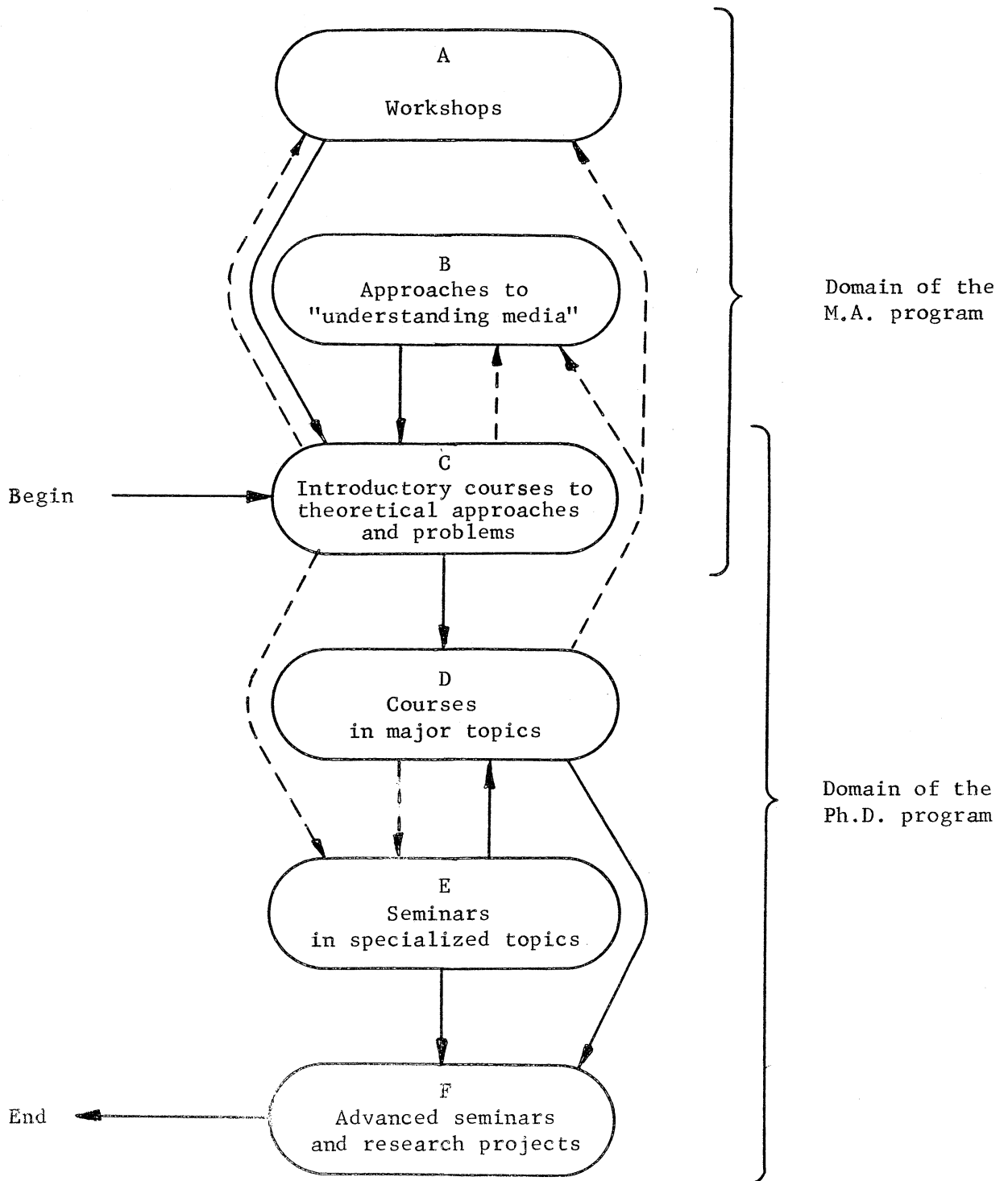
The fifth course on this level is assumed to provide the student with just that information he needs for designing his course of study most effectively. Having become familiar with major problems and approaches he should be given introductory lectures, course outlines and prerequisites for all courses from which he can choose within the program. This course should require no work on the part of the student, hence, give no credit. At the end of it, a student can enter other levels with maximum awareness of his possibilities.

Level D includes the major topics in social communication science providing choices for areas of emphasis. The courses should treat a topic on this level exhaustively leaving specializations for the subsequent level.

Level E contains seminars concentrating on specialized topics in social communication science which may grow out of level D and may therefore have some such courses as prerequisites. Level E offers to the instructor the possibility of pursuing more divergent interest, exploring together with qualified students new areas of knowledge, and engaging in group research projects.

Level F contains (a) advanced seminars where guests, visiting professors, members of the faculty, assistants and highly advanced Ph.D candidates have a chance to discuss theoretical and philosophical problems of the discipline and pioneering developments in other fields with implications for social communication science and (b) research activities undertaken outside formal courses and seminars.

With broken lines representing "permission of instructor" the permissible instructional steps in a Ph.D program for social communication science (administrative requirements omitted) may be depicted as follows:



B. Specific Topics

The topics outlined hereafter are formulated as if each could be treated within one course. Some material may, however, be such that several courses are required for its presentation, other material may be more profitably handled in one course, faculty permitting. It should be kept in mind that the concern with social communication is much too young to be definite. In a few years several topics which appear distinct today may turn out to be only specialized cases of a single process, other topics may expand considerably.

Level C

Courses introductory to social communication science, required for all students entering the Ph.D program.

CO0 Introduction to the Ph.D program

Introductory lectures, outlines and prerequisites of all courses offered in social communication science are presented by the instructional staff. Similarly, examples of research conducted by members of the faculty are exhibited. The student is supposed to gain an overview of the existing possibilities for finding a most profitable path through the instructional program. (No assignments, no credit)

CO1 Introduction to history of communications media

Communications is viewed as both product and agent of social transformation. Hence, conceptual frameworks of evolution, of socio-cultural and technical changes provide the context within which the history of communications technology is considered. Comparative data are drawn from ancient to contemporary and from tribal to modern industrialized societies. Emphasis lies on the formulation of those parameters in terms of which specific media technologies interact with other facets of societies.

CO2 Introduction to message structures

Development of concepts for the study of informative structures in formal and natural languages, non-verbal communications, and in messages of a more complex kind such as patterns of cultural or industrial expressions in the public media.

Among the topics are: the evolution of messages, culture and the structure of language, cognition and linguistic relativity, social roles of languages (speech communities, jargon and social stratification, nationalism and international conflict), representation of informative structures, semiotics,

semantics, and semantic analysis, problems of translation, mass media content analysis.

C03 Introduction to communication and organization

Presentation of conceptual frameworks capable of dealing with more complex social communication networks as they appear in various forms of social organization.

Among the topics are: social psychological foundations of communication, social control, power, and conflict; the nature of social communication networks in small groups, social movements, voluntary and involuntary bureaucracies, etc; behavioral consequences of types of communication networks; decision-making, problem-solving, regulating, learning, empirical problems of observation, of formal representation, etc.

C04 Introduction to formalizations in communication sciences

The mathematical foundation important to the understanding and formulation of theories in communication sciences are developed and theoretical frameworks are introduced capable of representing phenomena which concern its social branch. Covered are the fundamentals of probability theory, information theory, abstract algebra, logical syntax, game theory, etc.

Level D

Courses covering the major topics of social communication science. Prerequisite is the completion of the courses on Level C.

D01 Human information processes

Information handling by single human individuals is considered from a psychological point of view.

Among the topics are: perception; cognition including higher learning, attitude formation, cognitive interaction, problem-solving, creativity; organization of human behavior including speech.

The task is to merge research results and theories in psychology with those of information-processing and social communication.

D02 Interpersonal communication

The empirical domain of interpersonal communication ranges from relatively formalized human interaction in public places to more intimate encounters among relatively few individuals. It is restricted to face-to-face communications and, hence, to small groups. Such situations as meetings in the subway, communication in public institutions with clearly assigned roles, classroom situations, stage performances, group-therapeutic sessions, temporarily or permanently cooperating groups, coalitions are studies with the task of developing appropriate generalizations concerning the dynamic properties of such situations.

D03 Mass communication

Communication within or directed toward social systems possessing a relatively low degree of organization, i.e. the interacting members of such systems are typically numerous, relatively undifferentiated and can, hence, be treated statistically. Attempts are being made to develop theoretical models of mass communication which account for such processes as mass diffusion of innovation, spread of information (rumor, fads, addiction) dynamics of public opinion, voting behavior, communication via the mass media, survival of cultural objects, mass learning and adaptation processes, conditions for the emergence of primitive organizational structures (social movements).

D04 Popular culture

Study of intergenerational transmission of culture and social structure including the technological means of communication and social organizations facilitating such processes.

The topics include: interrelations of popular culture (as abstract framework for common knowledge) and social structure (as determining social existence), distribution of information forming or maintaining the popular images of social life, the role of such images in social institutional development, the social conditions affecting persistence or long-range changes in cultural content.

D05 Information and decision

Study of the role of information in decision-making at the nodes of complex social communication networks.

The networks considered may be interpersonal, in small groups (affected by such social psychological variables as leadership, expertise, sociometric measures), formal administrative (with such variables as distribution of social roles, authority and responsibility as well as informal relations), communal (affected by various modes of delegation, specialization and hence by the structure of participating organizations). Among the relevant theories are statistical decision theory, utility theory, game theory, simulation, theories of problem-solving, of cognition, of conflict resolution and of political bargaining.

D06 Social organization

Complex social organizations are studied as dynamic communication networks and hence, as information processing systems.

On the basis of such topics as formal representation of structures, network theory, quantifications of information flow, game theory and linear programming, distribution of information, of control, of cooperative and competitive objectives, organizational learning and adaptation, regulatory power and survival of organizational structure, general theoretical frameworks of social communication networks are developed.

D07 Ecology of information

Study of the systematic character of organizations dealing with generation, processing, maintenance, allocation, and consumption of information. Such organizations include research and development institutes, data proc-

essing agencies, educational establishments, libraries, intelligence services, public and specialized media of communication. Various such systems in the politico-economic setting are analyzed comparatively and attempts are made to develop predictive models of social developments and institutional adjustments on the basis of the distribution of information and processing capabilities within a social system. Relevant auxiliary disciplines include: sociology of science, philosophy of science, sociology of knowledge and popular culture, political economics, economics, ecology, organization and information theory.

D08 Strategic intelligence

Activities of complex organizations (science, industry, military, government, nations or less complex enterprises directed to actively gather, collect, process and thus generate information about their environmental focus are considered.

Criteria of evaluation (with reference to organizational objectives), methods of structuring such information (with reference to organizational facilities and capabilities) and information costs are studied and their implications for organizational development are discussed. The empirical domain includes the organizational use of such methods as viewer ratings, public opinion polling, consumer marketing, and motivation research, administrative communications research, educational research, peace research, propaganda analysis, military and diplomatic intelligence. The task of the course is the development of a general theory of what might be called "organizational perception."

D09 Strategic control

The use of communication as a means of control, i.e. manipulation of sections of a communicator's environment by selectively distributing or restricting the flow of information in accordance with some specified objectives.

Attempts are being made to integrate knowledge from such disciplines as advertising, human relations, psychotherapy, psychological warfare, political propaganda, education, personal influence, and international diplomacy toward a general theory of social control. Such a theory properly accounts not only for planned changes but also for unintended consequences for the larger social system of which the communicator and the object of manipulation are component parts.

D10 Communication and conflict

The role of communication in acceleration, deceleration, hence, in resolving social conflict.

The empirical domain is comprised of relatively complex organizations with conflicting objectives ranging from labor-union management negotiations to strategic intercourses in international situations. The social role of conflict and modes of resolution, bargaining and arbitration, viabilities, utilities and decision-making, use of information about and models of the opponent, formation of strategies, problems of survival and requisite internal reorganization, experimental games, simulation of interactions.

D11 Communication and the structure of languages

Study of languages as primary means of facilitating communication process in man-made and naturally grown systems.

Doctrines concerning language and communication in culture and society, typology of communicative languages and the domains of linguistic sciences: ethnography, philology, psycholinguistics, linguistics, semantics, logic, automata theory, computer programming. Abstract representation of language structure and linguistic algebras, the generative, receptive, and adaptational capabilities of the language users, problems of inter language translation, language-based communication between man, social organizations, artificial devices or combinations thereof.

D12 Theory and analysis of complex messages

Critical examination of the theoretical foundations of content analysis semantics and other empirical assessments of messages. Approaches to message content in philosophy, psychology, linguistics, anthropology, political and social science as well as implicit in automatic information processing. Other foundations pertinent to the development of generalized models of content inferences from messages. Empirical problems are considered in reference to the nature of the object system and to the limitations of scientific observation.

D13 Advanced research methods in communication science

The logic of scientific inquiry including research design, data analysis, statistical and non-statistical modes of inference. Emphasis is placed on models of data, optimizing research strategies (experiment, surveys, field research, historical methods, simulation techniques) computer languages and programs for the solution of computational tasks, formulation and verification of theories in social communication science.

D14 Fundamentals of cybernetics

Abstract study of communication and control processes in all possible systems.

Relevant formalizations are introduced based on the set theory of mechanism and homeostasis, abstract automata theory, formal logic, mathematical theories of information and communication, general systems theory, etc. Various algorithms concerning communication and control processes leading to organizational and teleological behavior of complex systems are investigated.

D15 Adaptation and control theory

Study of communication between relatively few but very complex systems, Communication and control theory, theories of artificial intelligence, decision theory including such branches as game theory and learning theory.

D16 Organization theory

Study of communication within very complex systems, i.e. system having extremely many interacting component parts out of which self-organization

and goal-seeking emerges. Theory of complex communication networks, typology and relational mathematics, theory of self-control and teleology.

Level E

Seminars with specialized topics in social communication science according to the special interests of the instructors. Although these seminars may preferably be based on some topic taught on Level D, their outline should be left to the respective instructors. Only some illustrative examples can be given here:

For instance, a seminar on "Communication and social change," focusing on the parameters of urban development and agricultural change could be build upon such courses as "popular culture," "information and decision," and "social organization."

A seminar on "cognitive interaction" may grow out of "human information processes," making use of "fundamentals of cybernetics" or "organization theory."

A seminar on "international communication" logically follows from such courses as "strategic intelligence" and "strategic control" and, if more historical aspects are intended to be considered, also from "ecology of information."

One can easily imagine a seminar on the "design of complex social communication networks," held jointly with some specialist in underdeveloped areas, and focusing on the theoretical problems which the introduction of communication technologies in non-industrialized countries poses, or, more general, the seminar would study the planning processes in social systems where social objectives and actual operations are largely incongruous and changes of communication structures have to be controlled in some way.

This level should also provide the possibility for joint research undertakings, for example:

E99 Group research project

Participation in a research undertaking under the guidance of a member of the instructional staff.

Level F

Advanced seminars and research activities outside formal courses and seminars.

F01 Seminar on philosophical problems of communication science

Discussion of contributions of cybernetics to classical problems of philosophy.

Epistemological implications of communication theory, of the principle of indeterminacy, of theorems of undecidability, Bremerman's limit and quantitative limitations of computability. Problems of control and planning with incomplete information. Philosophical implications of recent developments in artificial intelligence.

F02 Seminar on social goals and possible objectives

Investigation of possible societies and constraints on planning for long-range social goals.

The projections of future societies in contemporary social utopias, political philosophies, and popular ideologies are analyzed with respect to their realizability and their possible consequences. Theories of dynamic planning and control of very complex organizations are applied to estimate their survival value and, hence, evaluate the significance of such ideas. Criteria for realistic social goals are developed and applied on current value configurations.

F03 Interdisciplinary seminar in communication science

Selected topics of an interdisciplinary character are discussed.

Visiting professors and invited guests meet with members of the faculty and advanced PhD. candidates to discuss solutions of theoretical problems which go beyond the immediate concern of specific disciplines.

F99 Individual or term research project

Individual research undertaking or participation in a research project as a member of the team conducting that project, covers dissertation supervision.

C. Concluding Remark

An attempt has been made here to show some of the historical impulses which shaped the study of communication processes. Recent theoretical and methodological developments as well as drastic social changes due to the use of sophisticated communication technology necessitate considerable reorientation in the communication curricula. The attempt to locate the scientific mode of inquiry into social communication processes within other communication-oriented disciplines led to the outline of an instructional program in social communication science whose topics are believed to focus on theoretically fruitful problems and to cover a sufficiently broad domain of social communication phenomena.

The actual implementation of such a program and consequently its further development is dependent at least on (1) a favorable administrative climate in which a scientific undertaking of this form can grow in spite of the unconventional way its domain is delineated; (2) a heterogeneous faculty contributed from several disciplines, fascinated by and capable of solving the vast problems which communication in social systems poses; (3) a student body with sufficient educational background and many stimulating questions. Within a favorable working climate such an outline can assume the role of a temporary blueprint or a policy the realization of which calls for the design of numerous intermediate steps with frequent checkpoints always leaving ways for improvements.

The problems of implementation go beyond this temporary outline, but its discussion and criticism may increase the likelihood that a similar instructional program may eventually be realized.