

Arne COLLEN *

METHODOLOGICAL PERSPECTIVES ON HUMAN SYSTEMS,
DESIGN AND LEARNING FOR A MORE GLOBAL ETHIC

People working together with a common purpose can be conceptualized as a human activity system. The group can take a degree of command over its own learning through practice in and implementation of systems design. This process is one form of systems inquiry, which may have important ramifications for the evolution of institutions, communities and societies, and the emergence of a global ethic.

INTRODUCTION

With concern mounting over global conditions [5, 17, 19], greater recognition of local-to-global interrelationships is generating wide spread involvement of people in small group activities that may contribute to a more global ethic. This is an ethic that means greater responsibility taken by all persons, regardless of geographical location, position of employment, social status, or material wealth, for the humane use and ecologically based preservation of the Earth.

The purpose of this paper is to articulate some systemic means through which we may support and foster a more global ethic. My chief interest is in design learning as a form of inquiry, whereby persons working cooperatively can acquire a greater sensitivity to and appreciation for local-to-global interrelationships. The consequential systemic framework coming from these group experiences represents one form of group, organizational learning that may motivate, even enable, persons to aspire to a more global ethic.

HUMAN ACTIVITY SYSTEMS

People working together with a common purpose can be defined as a Human Activity System (HAS). For me, HAS is a conceptual and

*Saybrook Institute, 1550 Sutter Street, San Francisco, CA94109 USA.

pragmatic construct which helps us to describe and communicate shared activities and processes which we observe and experience as members of many such groups throughout our life.

A HAS can be described in terms of people and their interactions, whether a couple, family, smaller social or work group, neighborhood, community, institution, corporation, society, or intersocietal system. For practical purposes, a HAS seems to function best as a smaller group of people engaged in processes directed toward the fulfillment of groupdefined goals.

What makes it possible for us to form and sustain a HAS is the common language, meanings, beliefs, and experiences of the group. When the individuals of a group become willing to examine these common bases critically during a systemic inquiry, the stage is set for group, organizational learning that can reveal aspects of local-to-global interrelationships.

A HAS can be defined generally as a group of human beings engaged in a group process and assorted activities which contribute to the fulfillment of its goal. To be effective, the goal of a HAS must be ascribed to by all its members. It is a common goal. It becomes the primary purpose of the system it serves to guide, motivate and inspire its members, but does not necessarily include a vision of the future for the system. The group process and activities bring definition to the system, but may not clarify the long range, life-span aspects of the system, unless the process incorporates an emphasis on systems evolution.

SYSTEMS INQUIRY

To learn about, understand, explain, control, or develop a HAS can include the doing of scientific research with the people comprising the HAS. The researcher and the person or persons involved in the inquiry form the HAS. The process of inquiry, the use of research designs in inquiry, and the design of the inquiry process can be described in terms of conceptual systems in order to aid the researcher and participants in the conduct of the inquiry [11]. Furthermore, contextual paradigmatic systems [7] pervade and influence the design of the inquiry process and the inquiry itself.

The conduct of inquiry is often associated with the solitary activity of the researcher who investigates phenomena of the natural

world. Common forms of research for the natural sciences involve observation and experimentation. Objects are studied, manipulated, and controlled by the researcher for the purposes of testing hypotheses and constructing explanatory theories. But in the human sciences or human studies, the researcher's focus of attention centers on the human being [10]. The context may not refer to the natural world in an ecological sense, but to the social-cultural world in a familial-organizational-societal sense. Although much of human inquiry has been limited by the application of the research methods common in natural science to the study of human phenomena, increasing progress is being made to develop more human oriented forms of inquiry, such as participant observation, cases study methods, hermeneutical methods, and phenomenological methods. These forms of inquiry place greater emphasis on common interests of both researcher and participants, who derive a deepened understanding of themselves and their subject from inquiry. Importantly, these forms of research can become incorporated into a systems inquiry [14].

More recently yet another emphasis in human inquiry brings the focus to the social interactive level of human groups [1,6]. These methods emphasize not so much person centered inquiry, but group and social action oriented research in which the researcher becomes a participant of a group centered inquiry process. The shared interests come to determine the goals and direction of the inquiry. It is in this arena that the systems approach has its greatest relevance and its greatest application to human affairs; for the intention of these forms of action-based group inquiry is not only practical knowledge-based theories and deepened understandings, but also visible change and organizational learning. It is in this third arena that research methods study collective manifestations of learning, memory, consciousness, and evolution.

Thus, when a HAS takes a degree of command over its own learning through practice in and implementation of systems inquiry, I think of this process as one form of a general research cycle for the conduct of inquiry [15]. A HAS that engages in systems inquiry becomes a living system through its activities, activities which can yield both individual and group learning. Of particular relevance here is when the group learning may contribute to a more global ethic.

FROM DATA TO INFORMATION TO DESIGN

The volume of information being produced today by human beings staggers the imagination. Data are increasing at an exponential rate.

What meaning we bring to the data becomes information. We configure information into various compositions, patterns, and organizations to manage it, consequentially our growing number of information systems. The prototypical patterns we can reap from these seemingly indeterminate evergrowing masses become information designs invaluable to the further organization of information and the design of information systems.

The design of information systems is importantly linked to systems design and design learning, for information systems are not really computer databases or organized knowledge-based theories, but more fully understood, they are human activity systems. And it is the design aspects of these systems that can serve to illustrate the important applications of design to organizational learning and the conduct of inquiry. These viewpoints linking information systems and research methodology are attracting growing interest and finding broader application across the sciences [21].

TIME AND INQUIRY

We have found the concept of timeframe at the anthropocentric level to serve us well in daily life for the planning, execution, and control of our activities. However, it does not appear especially helpful now in relation to the expanded timeframes marking societal to global changes that seem to take decades. Considerations of design in time demand that we shift our thinking to envelop paradoxically the longer frame within the shorter. Our daily routines will be altered increasingly in more ways to accommodate to long range macroscopic concerns perhaps largely to us as we go about our daily business. Ironically, the impact of persons on Earth by sheer quantity and mobility may speed up certain types of global change. Further, what may not be initially so evident is the necessity to redesign especially our education systems to ease future generations into a more adaptive perspective regarding our place and purpose in the web of life.

In the design as well as the conduct of inquiry, longer timeframes for research will demand greater attention to the construction of sound research methodologies which match the complexities of the phenomena under study. In general, systems design and the employment of research designs to guide selective phases of inquiry must give greater consideration to changes, developments, even

transformations of a HAS over time [18]. Research findings which represent momentary, static snapshots of a HAS or a focus phenomenon will not become the primary finding, as is often the case presently, but only a progress report or information point in a trajectory of findings that is part of an information system emerging through the inquiry.

PLANNING AND DESIGNING

The long-standing preoccupation in institutions, corporations, and governments with strategic planning does not serve well the long term processes of societies and the planet. Our current global predicament and the growing interdependence among nations and transnational corporations confronts those in the most industrialized societies in particular with a starting challenge to an established way of life.

Design inquiry brings more focus on possibilities for structural, functional, and transformational changes in a HAS, where planning tends to be restricted to the maintenance and development of a HAS as already conceptualized. Design inquiry puts centerstage the concept of design, the design of the system, and the design of the design inquiry [2]. There is the benefit in such inquiry of design learning as one kind of learning and a system for design learning as one form of education [9]. With more resources devoted to a HAS engaged in the design of the organization and designing the course of its development, it is presumed that shifts in thinking can occur, shifts from thinking in terms of planning, short timeframes, and crisis management to designing, long timeframes, and organizational learning and societal evolution.

One fringe benefit of this process can be the recognition of a more global ethic, meaning: the vitality and prosperity of a HAS depends on that of other systems at the same, lesser, and greater levels of complexity as the HAS of reference. Design inquiry will require some consideration of these interrelationships. It will bring these relationships to greater visibility for the participants throughout the inquiry process. Documentation and description of these interrelationships can also make them more visible and accessible to others indirectly involved in the inquiry.

BEYOND ANALYSIS

It is commonplace to think that to understand or explain a system is to break it down into parts, functional and/or structural components, then articulate the relationship of one part to another. The resulting description, or systems analysis [22, 23] for example, is taken to be useful to those who are part of and study the system. The description often reveals the cybernetic loops of feedback and feedforward of resources and information among the components. However, this traditional approach yields largely a static, limited conceptualization. But the analysis does suggest more focal points for corroboration and further study.

Design is not thought to be an analytic activity, except for the need to specify components, that is, to design the components to fit and work together as ingredients of a larger whole conceptualized from a more general design. Nevertheless, analysis and design are complementary activities, in that the interplay between analyzing a system into its parts and synthesizing the parts of a system into its whole must repeatedly occur for the researcher to comprehend the dynamics of the system. This to-part-to-whole dynamic is one among several key aspects of systems thinking. In the study of a HAS the researcher depends on these two methodological activities; they become integral tools used in the inquiry process.

Systems analysis is but a part or phase of a more complex systems methodology. When complemented by design, it better serves the long term development of the organization. One extreme example is the analytic approach to the assessment of organizational effectiveness, Living Systems Process Analysis [20, 23]. When expanded conceptually and in practice to a Living Systems Methodology (LSM), with both analysis and design components equally represented [8], potentially, it can be a very powerful approach to organizational development and learning, which in turn may be used to foster a greater sensitivity of a global ethic.

In short, analyses often help to describe and understand problems, but it is more the design/redesign activities that bring about constructive, ameliorative changes. Both kinds of activity are necessary, and they can be complementary in a systems inquiry.

CONSTRUCTED METHODOLOGIES WITH SYSTEMS RESEARCH ARCHITECTURES

Research requires a means to discover. Research methods provide those means. When research methods, or selected aspects of them, are combined in a compatible, productive fashion in the conduct of inquiry, then we have constructed a methodology.

Since forms of group inquiry often draw upon forms of inquiry conducted by a single researcher, it is common to find in practice that a methodology is required to conduct substantively a form of group inquiry. In general, systems methodologies and social action research can make liberal use of several research methods in moving a small group of people through the inquiry process. For example, Soft Systems Methodology (SSM) guides a group through several stages of inquiry, taking the group back and forth between more conceptual and intellectual activities, and more experiential and action based activities [6]. This general inquiry process lends itself to incorporating at some stages aspects of several research methods, such as consensus building techniques, interviewing, participant observations, experiments, and focus groups.

Usually, it is a problem, crisis, or social issue that binds and sustains the group during the inquiry process. Opportunities for organizational learning are often of interest, but guidelines to direct the group process toward fulfillment of the stated purpose of the inquiry are often of concern.

While SSM is one well known systems methodology, it can be considered one example of a general systems research architecture, in that it presents a generic structure for the construction of research methodologies tailored to specific problem settings. SSM is adaptive to several variations of the basic structure and to many organizational settings and situations.

There is another generic architecture for systems inquiry which we can term Systems Design Journey (SDJ). Like SSM, it has shown itself applicable to a multitude of institutional problems and a variety of settings. Where Banathy has been exploring its potential in regard to the notion of Evolutionary Guidance System (EGS) and the redesign of education systems [4], my interest has concentrated on its potential as an architecture for constructing a wide range of more action based research methodologies for the human sciences.

SDJ provides a framework of five conceptual spaces for the design of a systems inquiry as well as the process of doing the inquiry itself [2, 4, 122]. Further, as noted for SSM, SDJ is a generic

systems methodology quite flexible to its supplementation by many research methods traditionally found in the natural and human sciences.

SYSTEMS DESIGN ARCHITECTURE

Bela Banathy [2] has described a generic architecture for systems design inquiry which I term Systems Design Architecture (SDA). It has shown itself applicable to a multitude of institutional problems and a variety of settings. For example, it can be used to formulate mission statements, clarify issues and problems, generate questions for systems design inquiry, articulate a process for design and redesign of institutions, and establish a HAS within the institution to manage and cope with institutional issues.

The architecture consists of five conceptual spaces. The process of mapping them can be considered a systems design inquiry process. The Design Space is the arena in which the inquiry process takes place. It is the space of reference for the design inquiry process. The HAS engaged in the inquiry incorporates into this space information from the four other spaces. The inquiry begins usually, but not necessarily, in the Contextual and Design Genesis Space, and it proceeds in a spiralling, iterative fashion to sample from the Experience Space and the Organized Knowledge Space. The thrust of the inquiry is toward the Space of the Future System, which is to contain the model of the system designed, or redesigned, in its future environment. Thus, one major outcome of the design inquiry process is to construct a model of the future system.

SDA is not only a framework for the design of a systems design inquiry, but also an ongoing point of reference throughout the inquiry process. Although the architecture is generic, the systems design inquiry process is unique to the HAS, time, and circumstances of the inquiry.

THE NOTION OF GUIDANCE AND LEARNING ABOUT SYSTEMS

A HAS can take a degree of command over its own learning, especially through practice in and implementation of systems design. This process can be considered one form of systems inquiry. Although a HAS can use the past as an experiential base and the present as a

referent, it can become very future oriented. It is this orientation which can inspire a HAS to engage in more transformational changes, thus the interest in social evolution.

Design inquiry is often directed toward the production of an image. The image, or idealized vision of the system a HAS seeks to become, can be described as its EGS. When a HAS commands the direction of its own activities, activities which serve to guide it in the pursuit of its idealized image, the HAS seeks to become its EGS. Whether a family, organization, institution, or network, an EGS oriented inquiry process emphasizes the activity of becoming. The interest centers on the social evolution of the HAS. Evidences of transformation are taken to be visible changes in structures, procedures, and practices which result in major alteration of the character and dynamics of the system.

According to Banathy [3], a HAS can be constituted with the intentional representation of the vital dimensions it will use to model its idealized image. It is noteworthy to describe here the key dimensions because they suggest one approach to design inquiry that can make more salient a global ethic by the very emphasis given in the inquiry itself. One version of the definitions are as follows: Aesthetics in the pursuit of beauty, cultural values, the arts and humanities, for the enrichment of our inner lives; Economics in the just use of resources and in the development of resources, integrated yet just for indigenous groups; Education in regard to the development of evolutionary competence and the design of just systems for current and future generations; Ethics in regard to our self-realization and integrity on personal and social levels in all dealings with others; Governance to encourage self-determination, peace development, and global cooperation; Science to provide a better understanding of conscious evolution, the evolution of society, and the promotion of human and societal betterment; Social Action in our activities of cooperation and collaboration; Technology in the service of the design of just systems for the improvement of the quality of life for human beings, and for life forms and habitats to ensure preservation and coevolution on the planet; and Wellness for physical, mental, and spiritual health of individuals, groups, and communities.

From 1988 to 1991 at Saybrook Institute, Banathy and I conducted focus groups exploring the self-organizing, value-clarifying, and purpose-seeking aspects of an EGS. For me, our work demonstrated the very useful notion of guidance and ideal-seeking activities in systems

inquiry. Systems inquiry can be guided by images of a future that is embedded in an evolutionary view of human and societal development.

GUIDING LEARNING THROUGH INQUIRY

There is a close association, compatibility, and integration possible of HAS, EGS, and SDJ [12]. Furthermore, careful consideration will reveal that complementary combinations of selective aspects of SMM, SDJ, LSM, and other such more general systems methodologies are possible. As methodology for the systems approach to inquiry progresses, the researcher discovers a burgeoning array of possibilities for guiding group organizational learning through inquiry. These methodologies have direct application to acquiring a more global ethic. They provide the means for the systems approach to group activities which can help bring a shift in thinking so as to recognize and comprehend the interdependencies among various human systems [13, 16].

But systems inquiry can become more than educational; it can lead to social action and amelioration. In this case, the researcher is a full participant and group advocate in the inquiry process. She or he has the role of documenting the process and may at various points be called upon by the group to facilitate from one stage of the inquiry to the next. In matching the complexity of the methodology to the complexity of the HAS under study, the roles of researcher, educator, and practitioner tend to blend into one more general pursuit serving the interests of the group. The research, therefore in systems inquiry, can make important contributions to hypothesis testing and theory building, deepened participants' understanding, and facilitation of social change.

CLOSING

People live and work in social contexts and depend on one another. Various groups of people can be studied from the systems perspective as a HAS. The study of these systems can take several forms. Inquiry through a research cycle can be carried out simplistically in terms of a research method like experimental, or more complexly as a methodology like SSM or SDJ. In general, with greater focus on guidance through design inquiry toward a more global

ethic, systems oriented researchers can better serve both the theoretical and the practical interests of people. In particular, they can help us to develop local-to-global perspectives which promote lifestyles more conducive to the continued social evolution of humanity and life on Earth.

REFERENCES

- [1] C. ARGYRIS, R. PUTNAM, and D. SMITH, *Action Science*. San Francisco: Jossey-Bass (1985)
- [2] B. BANATHY, "The Design Inquiry in the Context of Human Activity Systems". Proceedings of the International Society for General Systems Research 1, H-34-35 (1986).
- [3] B. BANATHY, "The Design of Evolutionary Guidance Systems". Paper presented at the meeting of the International Society for General Systems Research, Budapest, Hungary (1987, May).
- [4] B. BANATHY, *Systems Design of Education: A Journey to Create the Future*. Englewood Cliffs, NJ: Education Technology Publications (1991)
- [5] L. BROWN, *State of the World*. New York: W. W. Norton (1989)
- [6] P. CHECKLAND, *Systems Thinking, Systems Practice*. New York: John Wiley & Sons (1981)
- [7] C. CHURCHMAN, *The Design of Inquiring Systems: Basic Concepts of Systems and organizations*. New York: Basic Books (1971)
- [8] A. COLLEN, "Living Systems Process Methodology in the Design and Redesign of Organizations" Paper presented at the meeting of the International Society for General Systems Research, St. Louis, Missouri (1988, May).
- [9] A. COLLEN, "Thoughts on Systems for Design Learning" Paper presented at the Sixth meeting of the Fuschl Conversations Group, Pacific Grove, California (1989, November).
- [10] A. COLLEN, "Advancing Human Science". *Saybrook Review* 5, 1-38 (1990)
- [11] A. COLLEN, "The Systems Approach and its Methods for Systems Development". Invited address to the Center for Systems Development, Aarhus University, Aarhus, Denmark (1990, September)
- [12] A. COLLEN, "Evolutionary Guidance Systems and Systems Design". Paper presented at the Tenth European meeting of the Cybernetics and Systems Research Association, Vienna, Austria (1990, April)
- [13] A. COLLEN, "Evolutionary Guidance Systems and Societal-to-Global Learning". Paper presented at the Seventh meeting of the Fuschl Conversations Group, Fuschl Lake, Austria (1990 April).
- [14] A. COLLEN, "Human Science and Systems Science: Allies or Enemies?" Paper presented at the meeting of the Human Science Research Association, Aarhus, Denmark (1989, August).
- [15] A. COLLEN, "Can Science Be Natural, Systemic, and Human?" Paper presented at the meeting of the International Society for the Systems Sciences, Edinburgh, Scotland (1989, June).
- [16] A. COLLEN, C. WAILAND, J. BACH, and W. REEVES, "Evolutionary Guidance Systems for the Systems Design of a Just Society for Future Generations". Paper presented at the meeting of the International Society for the Systems Sciences, Portland, Oregon (1990, July).
- [17] G. GROSVENOR, "Will We Mend Our Earth?" *National Geographic* 174(6), 766-771 (1988, December).
- [18] A. HALL, *Metasystems Methodology: A New Synthesis and Unification*. New York: Pergamon (1989)
- [19] W. HARMAN, *Global Mind Change.*, Indianapolis, IN: Knowledge Systems (1988).

- [20] J. MILLER, *Living Systems*. New York: McGraw-Hill (1978)
- [21] H. NISSEN, H. KLEIN, and R. HIRSHEIM (Eds.), *Information Systems Research: Contemporary Approaches and Emergent Traditions*. Amsterdam: North-Holland (1991)
- [22] A. REISMAN, *Systems Analysis in Health-Care Delivery*. Lexington, MA: D.C. Heath and Company (1979)
- [23] G. RUSCOE, R. FELL, K. HUNT, S. MERKER, L. PETER, J. CARRY, J. MILLER, B. LOO, R. REED, and M. STURM, "The application of Living Systems Theory to 41 U.S. Army Battalions". *Behavioral Science* 30, 7-52 (1985).

**METODOLOGICZNE PERSPEKTYWY SYSTEMÓW DZIAŁAŃ.
PROJEKTOWANIE I NAUKA W PROCESIE UPOWSZECHNIANIA ETYKI.**

W artykule wprowadzono pojęcie systemu działań obejmującego grupę ludzi pracujących nad osiągnięciem tego samego celu. Przedmiotem artykułu jest projektowanie nauczania jako forma badań systemowych realizowanych przez grupę specjalistów, z podkreśleniem zależności między aspektami lokalnymi a globalnymi. Taki proces może mieć znaczenie dla ewolucji instytucji, środowisk i społeczeństw oraz prowadzić do wypracowania etyki globalnej.

Politechnika Wrocławska



Information Systems'
Architecture and Technology
ISAT '93

Architektura i technologia
systemów informatycznych
ISAT '93

edited by Mieczysław Bazewicz

Wrocław 1993

Praca naukowa promowana przez Ministerstwo Edukacji Narodowej



Artykuły przyjęte od autorów bez poprawek merytorycznych zakwalifikowała do druku
Rada Programowa

© Copyright by Wydawnictwo Politechniki Wrocławskiej, Wrocław 1993

WYDAWNICTWO POLITECHNIKI WROCŁAWSKIEJ
Wybrzeże Wyspiańskiego 27, 50-370 Wrocław

ISBN 83-7085-043-X

Nakład 250+55 egz. Ark. wyd. 23. Ark. druk. 21²/₈. Papier offset. Id. III, 70 g, B1.
Oddano do druku w marcu 1993 r. Druk ukończono w maju 1993 r.
Zakład Graficzny Politechniki Wrocławskiej. Zam. 230/93.