

# ISSS Integrated Systemic Inquiry Primer Project (ISIPP)

## A TASTE OF SYSTEMICS

Edited by Tom Mandel

### *SYSTEMS INQUIRY*

---

**By Bela Banathy**

The systems view is a world-view that is based on the discipline of SYSTEM INQUIRY, Central to systems inquiry is the concept of SYSTEM. In the most general sense, system means a configuration of parts connected and joined together by a web of relationships. The Primer group defines system as a family of relationships among the members acting as a whole. Bertalanffy defined system as "elements in standing relationship."

The joining and integrating of the web of relationships creates EMERGENT PROPERTIES of the whole. These properties of the whole may not be found in any analysis the parts. This is the VALUE of systems theory. the WHOLENESS that can't be seen in the parts.

SYSTEMS INQUIRY is a system itself. As a conceptual system, it has four interrelated and internally consistent aspects acting as a whole: systems PHILOSOPHY, systems THEORY, systems METHODOLOGY and systems APPLICATION. Furthermore, systems inquiry embraces two kinds of disciplined inquiry; it's conclusion-orientated inquiry mode PRODUCES systems knowledge, its decision orientated inquiry mode APPLIES systems knowledge to the formulation and selection of systems methods that address real-world situations. "As a conceptual system, it has four interrelated and internally consistent aspects."

SYSTEMIC PHILOSOPHY asks the question, "How can we understand systems?" With the perspectives of systems philosophy, we look at the world in terms of facts and events in the context of wholes, and we understand them as integrated sets purposefully arranged in systemic relations. In contrast to the analytic, reductionist, linear, single cause-and-effect view of the philosophy of classical science, systems philosophy brings forth a reorganization of ways of thinking and knowing perceived reality, a view manifested in synthetic, expansionist, dynamic, and multiple/mutual causality modes of thinking and inquiring, how things work more than what things are.

Each scientific discipline in classical science has developed its OWN theoretical scheme. SYSTEMS SCIENCE, on the other hand, transcends those disciplinary boundaries,

seeking likeness (or isomorphy) of principles, concepts and laws that exist in the various realms of experience. We INTEGRATE, within the framework of systems theory, the findings of the various disciplines. That is the unique POWER of systems theory. With this power we can understand and work with the insights and knowledge generated by the disciplines that are relevant to our domain of inquiry. The organized arrangement of these "general principles" constitutes a GENERAL THEORY OF SYSTEMS - an exposition applying to all systems.

SYSTEMS METHODOLOGY differs from the methodologies of the disciplines in that the methodology of a particular discipline is clearly identified and is to be adhered to, In Systems Inquiry, on the other hand, one selects -- from a wide range of approaches, methods, and tools that best fit -- the TYPE of system, the PURPOSE and NATURE of the Inquiry and the specific problem SITUATION. Systems Methodology has two domains of Inquiry; (a) the study of methods by which we pursue systems scholarship and produce systems knowledge, and (b) the identification and description, methods, and tools for applying systems theory and systemic thinking in the analysis, design and development of complex systems. More specifically, this task is twofold:  
+ to identify, characterize and classify the system of our interest, the system of issues embedded in our system, other systems that interact with us and the larger system (the environment) that embeds our system. + To select, identify and characterize specific strategies, methods, and tools appropriate to the work with our system.

When we talk about SYSTEMS APPLICATION we are considering the application of systems approaches/models/methodologies/methods/tools in a specific FUNCTIONAL CONTEXT, E.G., a social system INVOLVES the following:

- (1) select the approach/model/methodology/methods/tools that are appropriate to:
- (2) the type of systems in consideration: rigidly controlled, deterministic, purposive, heuristic, purpose seeking AND
- (3) the specific domain of inquiry: description (of the system), analysis, design, development, management.

"We integrate, within the framework of systems theory, the findings of the various disciplines."

In summary, By OBSERVING various types of systems and studying their behavior, we can recognize characteristics that are common to all systems. Once we have identified and described a set of concepts that are common to the systems, and observed and discovered among some of them certain relationships, we can construct from them general systems PRINCIPLES. Thus, a systems principles emerges from an interaction/integration of related concepts. Next we are in the position to look for interrelations among principles and organize related principles in to certain conceptual schemes we call SYSTEMS MODELS. This process of starting from OBSERVATION and arriving at the CONSTRUCTION of systems models constitutes the first stage of developing a systems view.

-----