

ISSS Integrated Systemic Inquiry Primer Project (ISIPP)

A TASTE OF SYSTEMICS

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CONCEPTUAL FOUNDATIONS

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The mind set of the industrial era has its roots in classical science - often associated with Newton - that emerged some three hundred years ago. Disciplined inquiry during the last three hundred years, inspired by the Cartesian-Newtonian scientific world view has sought understanding by taking things apart by seeking the "ultimate part" and groping to see or reconstruct the whole by viewing the characteristics of its parts.

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This REDUCTIONIST orientation was not able to grasp "wholeness" which EMERGES from the mutual interaction of parts, where the part gets its meaning from the whole and by its interaction with all the other members of the whole. The properties of the whole cannot be seen from the viewpoint of the parts.

Today, we realize that the reductionist method of analysis has to be complemented with synthesis and with expansionism, aimed at understanding larger and larger wholes in which our systems of interest are embedded.

Classical, traditional, science is based on the CERTAINTY OF DETERMINISM and the confidence in PREDICTION. However, Heisenberg's Uncertainty Principle and Einstein's Relativity have humbled our expectations for prediction. The principle of uncertainty has helped us to understand that the observer cannot be separated from what is observed, This is obvious in physics and much more so in social science.

Figure 1 depicts the key distinctions between classical and systemic orientations.

Traditional science's unidirectional CAUSE AND EFFECT is inadequate to deal with the many interactive variables of complex, dynamic systems. We know now that in such systems, the dynamics of MULTIPLE, MUTUAL and RECURSIVE causation operate.

Classical science saw systems to be basically closed, having only limited and highly controlled interaction with their environment. However, living systems are open systems, having intensive interactions with their environment. Closed systems are governed by NEGATIVE feedback, essentially internal relationships maintaining the status quo, while open systems operate by POSITIVE feedback, essentially external relationships allowing for growth and change

Traditional science was unable and unwilling to consider PURPOSE and MEANING which, in the emerging view of disciplined inquiry, has a guiding role. And where dominance once was the purpose, there is now a search for establishing a grand ALLIANCE of science, philosophy, art, and religion. "a grand ALLIANCE of science, philosophy, art, and religion."

In human activity systems these insights have led us to aspire to UNDERSTANDING rather than predicting, problem MANAGEMENT rather than problem solution, and PURPOSE SEEKING as a mode of thinking and action rather than determinism.

Classical science defined complexity in terms of the multiple parts of a system, while systems science defines it based on multiple interactions with the environment and the interactions among parts within the viewed system.

The technologies of MANUFACTURING THINGS worked well in managing the organized simplicity of the closed-systems production of the "THINGS WORLD" of the machine age. This mechanistic/deterministic world-view manifesting itself as technology drove the industrial revolution. We learned to MANAGE THINGS. But those technologies became useless, once we were faced with the organized open-system dynamics of the "WORLD OF COMPLEXITIES emerging in this new era.

We study the social system in a variety of FRAGMENTED disciplines. This separating-into-disciplines approach can provide only partial interpenetration of the system studied and sets forth descriptions based on disparate theoretical frameworks. We study our social systems through the lenses of sociology, psychology, economics of education, the anthropology of cultures, economics, organizational and communication sciences, poetical science, and so on.

"We cannot observe properties of the whole bit by bit."

Such compartmentalized inquiry, with the use of widely differing orientations, methods, and languages of the separate disciplines, results in unintegrated and incomplete knowledge of the characterization of what a social system is as a whole. A particular discipline can address only a narrow aspect of the whole, social science scholarship typically focuses on only a few variables, studied in isolation by the experimental methods of classical science. Thus, we cannot consider the complex interactions and systemic interconnectedness of the various components that integrate into the whole. We cannot adequately portray the mutually interacting and recursive dynamics, the

relationships, of the processes of our complex social systems. We cannot observe properties of the whole from an analysis of just the parts apart.

For all the reasons portrayed above it is suggested that we are faced with the reality that the old ways of thinking and viewing do not work anymore. We have to be willing to consider the application of systems thinking, systems inquiry, and the use of the systems view for both human systems scholarship and PRACTICE. In today's world the methods of CREATING, ORGANIZING, and USING INFORMATION and KNOWLEDGE are the requisite intellectual technologies.

The internalization of this new type of inquiry in our thinking manifests itself in the SYSTEMS VIEW, and its activation in social systems will lead to practical systemic ACTION
