

ISSS Integrated Systemic Inquiry Primer Project (ISIPP)

A TASTE OF SYSTEMICS

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TYPES OF SYSTEMS

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In contemplating systems work, the identification of the type of system we select is a crucial issue.

There are two major types: NATURAL SYSTEMS and DESIGNED SYSTEMS. Natural systems range from subatomic systems to living systems of all kinds, our planet, the solar systems, galactic systems and the Universe. The genesis of these systems is the origin of the universe and the result of the forces and events of evolution. The other main types are DESIGNED SYSTEMS. These are our creations and include several major types: (a) fabricated-engineered-physical systems (manmade artifacts); (b) hybrid systems that combine physical construction and nature, e.g., a hydroelectric plant); (c) designed conceptual systems (such as theories, philosophies, mathematics, logic, etc.) and their representations in the forms of books, records, and descriptive of prescriptive models; and (d) human activity systems. For our present purposes, human activity systems and their relevant abstract systems and representations are of special interest.

HUMAN ACTIVITY SYSTEMS are our purposeful creations.. They are less tangible than natural and designed physical systems, They are manifested in sets of activities (relationships) carried out by people who select and organize these activities to attain a purpose, These activities often involve various natural and designed physical systems and/or abstractions of the way we think about and reason these activities, such as theories of action. Human activity systems range from families and small groups (organized for a purpose) to organizations communities, nations, regional/international associations, and the global system of humanity.

A key consideration in making distinctions among various types of systems is the issue of: how much freedom does the system have to select purpose, goals, methods, tools, etc., and how widely is the freedom to select distributed (or concentrated) in the system?

We can speak of various types of human activity systems. We can define and describe these types based on such considerations as: the degree to which they are "closed or open". their mechanistic vs. systemic nature, their unitary or pluralistic position as the their purpose, and their degree of complexity. Based on these considerations we can differentiate such types as:

RIGIDLY CONTROLLED systems, such as man-machine systems or assembly-line work groups. These are rather closed and have only limited and well-guarded interactions with their environment. They have few components and a limited degree of freedom, have singleness of purpose and behave rather mechanistically.

DETERMINISTIC systems are more open than rigidly controlled systems but they still have clearly defined goals, and some degree of freedom in selecting means of operating (less mechanistic). They might have several levels of decision-making; thus they are more complex than the rigidly controlled systems. Examples; bureaucracies, centralized (national) educational systems, small business operations.

PURPOSIVE systems -- such as corporations, public service agencies, our public education systems ---are still unitary (have their goals set), but have freedom in selecting operational objectives and methods. They are considered to be somewhat open in that they are to react to environmental changes. They are often very complex.

HEURISTIC systems -- such as: new business ventures, R&D agencies, nontraditional (experimental) educational programs -- formulate their own goals under some biased policy guidelines (thus, they are somewhat pluralistic). They are necessarily open to changes and interact intensively -- even co-evolve -- with the environment. They are complex and systemic in their functions/structures.

PURPOSE-SEEKING systems are ideal-seeking, guided by their vision of the future. They are open and are able to co-evolve with their environment. They are complex and systemic. Being pluralistic, they define their own policies/purposes and constantly seek new purposes and new niches in their environments. Examples: corporations seeking social service roles, communities seeking to establish comprehensive systems of learning and human development and to integrate their social service functions, and societies/nations establishing integrated regional systems.
