

INTEGRATIVE SYSTEMS SCIENCE

Identifying, exploring, and understanding patterns of complexity through contributions from

Foundations

Meta-theories of Methodology, Ontology, Epistemology, Axiology, Praxiology (theory of effective action), Teleology, Semiotics and Semiosis, Categories, etc.

Theories

General Systems Theory, Systems Pathology, Complexity, Anticipatory Systems, Cybernetics, Autopoiesis, Living Systems, Science of Generic Design, Organization Theory, etc.

Representations

Models, Dynamics, Networks, Cellular Automata, Life Cycles, Queues, Graphs, Rich Pictures, Narratives, Games and Dramas, Agent-based Simulations, etc.

Scientific Disciplines
e.g., Physics,
Neuroscience

Humanistic Disciplines
e.g., Psychology,
Culture, Rhetoric

Pragmatic Disciplines
e.g., Accounting,
Design, Law

Formal Disciplines
e.g., Math, Logic,
Computation

SYSTEMS THINKING

Appreciative and reflective practice using 'systems-paradigm' concepts, principles, patterns, etc.

practice informs theory

theory informs practice

SYSTEMS APPROACHES TO PRACTICE

Addressing complex problems/opportunities using methods, tools, frameworks, practice patterns, etc.

Pragmatic, Pluralist, or Critical multi-methodology uses heuristics, prototyping, model unfolding, boundary critiques, etc., to understand assumptions, contexts, and constraints, including complexity from stakeholder values and valuations; chooses appropriate mix of 'hard', 'soft', and custom methods; sees systems as networks, societies of agents, organisms, ecosystems, rhizomes, discourses, machines, etc.

'Hard' methods are suited to solving well-defined problems with reliable data, clear optimization goals, and at most objective complexity; use machine metaphor and realist/functionalist foundations.

'Soft' methods are suited to structuring problems involving incomplete data, unclear goals, perspective and role complexity, etc.; use learning system metaphor and constructivist/interpretivist foundations.

direct input from
disciplines

measured
and specified
data, metrics, etc.

input from experience
and legacy practices

solicited
local values,
knowledge, etc.

Outcomes



Actions