

Human Systems Dynamics: The Research and Practice Landscape

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All of us who work in the field of human systems dynamics share a great deal. Yet, when we talk with each other, we often focus on difference and fail to see how our various modes of work are complementary. The following table is a first-draft effort to explore how the various strands of the field are different and how these differences might enhance, rather than fragment, our shared work.

How do investigators do their work? Tools for exploration and explanation include the methods that we use to understand and interact with the world. These are the models, theories, methods, and languages that we use to uncover and test new learning and share new learning with others. Though there is a continuum, for simplicity I've included four categories of tools:

- Practice is the direct engagement with the world. Pure practitioners are able to gather data and respond appropriately without translating the experience into shared symbols.
- Weak metaphors are not weak in a bad sense, they are just not strongly connected to their mathematical or scientific roots. Weak metaphors can be heuristic, helping people to see patterns and relationships through poetic connections and suggestions.
- Strong metaphors are not better by nature, they are just more strongly dependent on the mathematical and scientific disciplines from which they emerge. In this continuum, science would lie somewhere between mathematics and strong metaphor.
- Mathematics captures the objects and relationships in systems through symbol sets. Rigid rules control the meaning of symbols within a given context, though multiple contexts and sets of assumptions do exist and are applied to complex human systems.

What do investigators seek to understand or influence? The phenomena they consider is the second way in which strands of human systems dynamics research and practice differ. Again, a continuum is articulated by categories. This time there are three:

- Surface structures are the characteristics of experience that are seen and acknowledged by everyone. These are the obvious aspects of experience that can be observed (if not understood) easily.
- Evident deep structures are the characteristics that can be seen by some, but not by all. When those who see it are able to name or represent the deep structure and explain its presence, then others are able to see it easily.
- Subtle deep structures are the characteristics that cannot be seen with anyone's naked eye. They require special processes and procedures to "uncover" the patterns that lie hidden in the phenomenon.

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| <i>Tools for exploration and explanation</i> | | | | |
|--|--|--|--|--|
| Phenomena | Practice | Weak metaphors | Strong metaphors | Mathematics |
| Surface structures | Best practices Standard operating procedures 15% solution Short lists of simple rules | “My life is chaotic” Unpredictability Relationships Stories Retrospective analysis | Coupling Mutual causality Emergence Degrees of freedom | Funding flows Budget Outcome measures Accounting procedures Standard graphing procedures |
| Evident deep structures | Adaptation Reflection Learning Practical models Anomalies as surprises | Qualitative bifurcation chart Patterns emergent Butterfly effects | Landscape analysis Bundles CDE Model Complex responsive process Sense making | CQI tools of analysis Statistics Context analysis Low dimension equations |
| Subtle deep structures | Unconscious expertise Intuition | Spirituality Social movements Personal transformation | Computer simulation models Classes of attractors Syndemics | Power law Nonlinear time series models Network analysis Self-organized criticality Quantum anything Dimensionless constants nK model |

NOTES:

This table is intended to begin a conversation, not to end it. Every aspect of this current draft is open to challenge and revision. Each of the cells represents an interesting research and practice agenda that can move the work of the whole forward. Communication between and among cells is challenging, but it provides opportunities for new insights and development for individuals and the field.