Using the Visibility and Depth Iceberg Diagram to Understand Complex Systems

There are many definitions of systems. We’re using a definition of a system from Meadows (2008): “A system is an interconnected set of elements that is coherently organized in a way that achieves something.” What the system achieves may or may not be what we want.

Evaluators identify the systems of relevance to their work. They look at patterns within the systems, paying particular attention to culture and social justice.

Evaluators use a systems lens in their evaluation practice to:

- **ask** different kinds of evaluative questions, including questions that address social justice concerns (e.g., questions about access and opportunity)
- **look** for patterns that give clues about appropriate theories of sustainable change
- **find** leverage points (where small changes can create large and/or long-term effects)
- **consider** different roles as an evaluator (e.g., to include attention to political action)

This document describes the iceberg diagram we are using to frame our thinking about change in complex systems. The diagram encourages us to look below the visible activities and results of a given project/initiative to deeper and less visible features of systems that influence the visible activities and results.

The purpose of looking below the surface is to determine leverage points—places in the system where a small change can lead to a lasting shift in behavior. By identifying potential leverage points, the evaluator can assist initiative leaders to take action to efficiently move toward their desired outcomes. The deeper you go in the iceberg, the more effective the shift is likely to be. However, those deeper changes often are more difficult to accomplish.

**Determining the Link between Activities and Results:** Evaluations often begin by looking at the connections between the activities of a project (the intervention) and the results for beneficiaries, e.g., students and/or teachers/faculty in an education setting. Many methods exist...
for doing this that are common practice including experimental and quasi-experimental designs and case studies.

**Determining Patterns:** To understand why the results are occurring in a particular situation, look more deeply into the system features that are influencing the project/initiative. One way to do it, using a systems thinking approach, is to look for patterns across time and/or locations that help deepen your understanding of the situation. To look for patterns, ask questions and conduct analyses of your qualitative or quantitative data about activities and results and their links to other parts of the systems. They reveal patterns—similarities, differences, and interconnections across time and/or locations.

**Identifying Norms, Infrastructures, and Policies:** These features of relevant social systems are rich areas for understanding how systems may be affecting the patterns, activities, and results. Just a hint. First map the various systems that are affecting the initiative you are evaluating. Seek to identify norms (typical ways of behaving), infrastructure (basic features of an organization such as information flow, ways of organizing, hiring practices, accountability and such), and policies (established guidelines/rules, requirements for how operations are carried out). The norms, infrastructures, and policies may be within specific organizations, social systems, and/or partnerships. They also may be within communities or networks and be informal.

**Paradigms:** the mind-set out which shapes the nature of a system, e.g., its goals, structure, rules, and other features.

**Leveraging System Dimensions**

Capra (1997); Olson and Eoyang (2001); Cabrara, Colosi, and Lobdell (2009); and Williams and Hummelbrunner (2011) have identified closely related models of system conditions or dimensions to consider when looking for leverage points in systems. We have chosen to use Williams and Hummelbrunner’s terminology—boundaries, relationships, and perspectives—with the following definitions (Parsons & Jessup, 2011):

- **"Boundaries"** refers to demarcations that create a region or entity. Boundaries can refer to such demarcations as physical entities, organizational identities, social systems, and rules of conduct. Boundaries may be permeable—an open system—allowing exchange with the environment while still distinguishing the system or other entity from its environment.

Illustration of Visibility and Depth in Complex Systems with Leveraging Dimensions
"Relationships" refers to the connections and exchanges that exist among bounded parts of a system, agents, or elements. Interconnections/relationships are as, or more, important than the entities making up a system. Relationship patterns help identify types of systems such as hierarchical systems, networks, families, communities, and social groups. Cause-and-effect relationships are another type of relationship.

"Perspectives" refers to mental models, world views, and purposes. Perspectives bring forth differences. Different stakeholders may have different perspectives on a given situation, even if they are part of the same stakeholder group.

Thinking in terms of these dimensions provides insights into possible leverage points for changing systems.

Further Information

Using the Visibility and Depth Iceberg Diagram to Understand Complex Systems is part of a series of tools developed by InSites (www.insites.org). The series is designed to support those engaged in learning, inquiry, and practice within complex social settings. This document was developed in part under funding from the National Science Foundation, grant #1118819. For more information, contact Beverly Parsons at bparsons@insites.org.

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References


