

The Systems “Iceberg”

It seems that every field has an iceberg illustration, and systems theory is no different. Icebergs are excellent illustrations because there is so much that we don't see or understand at first, in so many fields. The most helpful example of the systems iceberg is from Peter Senge, author of *The Fifth Discipline*. It illustrates four levels of system behavior and corresponding responses. At the surface, visible to everyone, is the level of events. In this example, the event is catching a cold. In the next (unseen) level are patterns or trends, multiple events that have combined to create this pattern: “I've been catching more colds and sleeping less.” Below this level are underlying structures, which reveal what influences those patterns. At this level, we identify several variables that could be affecting the patterns, such as “more stress at work, not eating well, difficulty accessing healthy food near home or work.” The most basic, foundational level is the mental model, which is the bedrock of the system. Mental models are the beliefs, values, assumptions, and ideas that keep the system behaving as it does. In this example, the beliefs—Career is the most important piece of our identity, Healthy food is too expensive, and Rest is for the unmotivated—are what inform the mental model.

An iceberg is an excellent illustration for another reason. What sank the Titanic was the unseen part of the iceberg, and the hidden part of the systems iceberg can sink any organization, including a church. The iceberg tool clarifies that what can be seen is determined by what is unseen. We see events as they occur, and we can begin to detect a pattern of events because they happen above the waterline. But the bulk of the iceberg exists below the waterline. For example, catching a cold is a single event. A pattern is recognizing that I have been catching more colds lately. Systemic structures underlying those patterns are not immediately visible. However, when I spend time reflecting on why I might be catching more colds lately, I realize that I've been spending more time at work on an important program and that the stress level surrounding that project is high. In other words, underlying structures must be “surfaced” through intentional effort.

These structures drive specific ways of thinking and acting that result in the patterns and events we observe. For example, the thought that “I am what I do” may dominate my attitude toward work, which elevates my stress level and contributes to working excessive hours, which both make me more susceptible to catching colds.

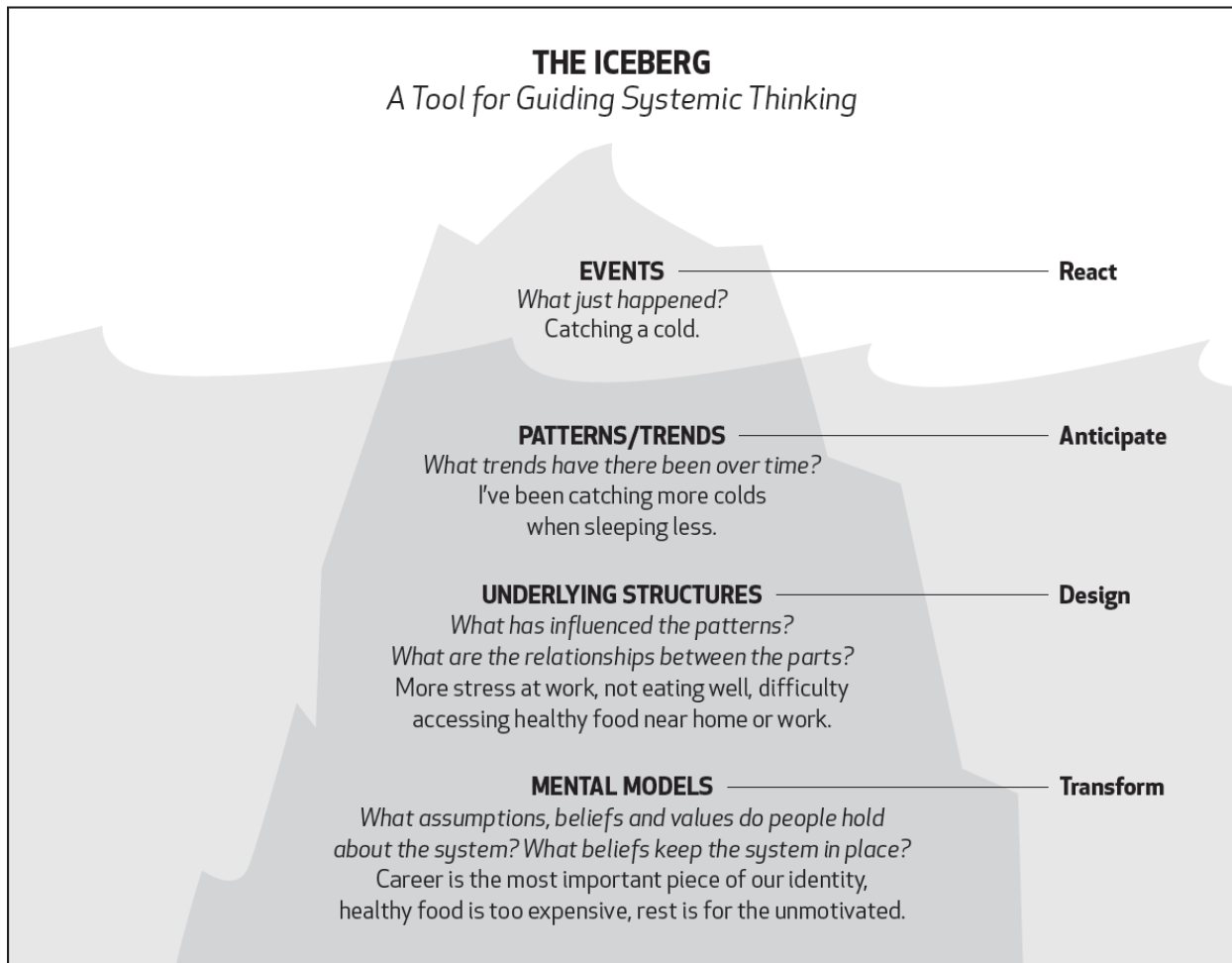


Figure 2.1: The Systems Iceberg. Source: Northwest Earth Institute, 2019. Retrieved from <https://nwei.org/iceberg/>.

In social systems, underlying structures does not mean “logical structure.”ⁱ It isn’t the structure reflected on the church’s organizational chart. Instead, systemic structure is concerned with the “key interrelationships that influence behavior over time.”ⁱⁱ In a church, structures might be relational networks, policy controls, or ministry guidelines, for example. The point is that the underlying structures drive—or cause—the patterns and events that are occurring. Many traditional systems thinking iceberg diagrams include only these three levels: events, patterns, and systemic (or underlying) structures. Peter Senge added a fourth, subsurface, level to the iceberg—mental models—which are composed of values, assumptions, beliefs. Understanding

mental models is essential to systems thinking and implementing effective interventions in social systems.

ⁱ Peter Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (2nd ed.), (New York: Crown Publishing, 2006), 44.

ⁱⁱ Senge, *The Fifth Discipline*, 44.