Second Systems Thinking Special Edition

Systems thinking is a popular lens that lends significant insights into problems, issues or situations in many different fields. This Special Edition provides a demonstration of the application of Systems Thinking to policy related issues in many areas such as resource management, race, and education. All of these papers show that four simple rules underlie the plurality of systems thinking methods and problem solving techniques. These rules are effectively taught and learned in a reasonable amount of time in a course on systems thinking for public policy for students with no previous exposure to the field. At its core, systems thinking focuses on how to deeply understand and find innovative solutions to both the everyday and wicked problems we face. Many of the policy and programmatic issues students and policymakers face are complex and interdisciplinary in which information can be uncertain and stakeholders can be numerous and have competing interests in the solution.
Introduction to the Second Systems Thinking Special Edition

**Systems Thinking for Public Affairs**

This course on systems thinking through the Cornell Institute for Public Affairs (CIPA) introduced Fellows to systems thinking as a field, and more importantly, as an analytical method to apply to their analysis of a diverse array of policy-relevant issues they were studying at the time. For example, students learned to seek out leverage points in systems that cause large shifts in the system. These leverage points are often the root of big changes from smaller efforts. Traditionally, many systems are plagued by bureaucratic resistance or inertia towards change, but the application of a systems approach to policy analysis shows that system wide change is often the result of simple rules applied across multiple levels within a system—this works well for the multitude of organizations involved in policy and programmatic work.

The organizational settings that CIPA Fellows interact with are complex, adaptive systems because change within them involves the collective behavior and interactions of independent agents. Changes in any level of the system have implications at other levels of the system, because they interact with and are comprised of multiple subsystems. While specific, local interventions may impact a particular sector within a system, true reform requires system-wide, coordinated efforts distributed throughout the institution or organization. In short, whether at the supra or subsystems level, leaders must be conscious of the interrelation of all aspects of a system. Actions taken in one area are likely to ripple across others. At the macro level in particular, a systems approach tells us that policymakers should be mindful that direct intervention for desired outcomes relies on an understanding of the layers of complexity and interdependence within a network of interacting agents. Here, a simple rules approach offered by Systems Thinking directed at the micro (individual) level has greater likelihood of success, often in the short and long term.

**The Four Rules of Systems Thinking**

Systems thinking is the application of four cognitive skills or rules to any and all information. The four rules are making **distinctions** and recognizing **systems**, **relationships**, and **perspectives**, or DSRP. More importantly, awareness of the fact that you are making distinctions, identifying systems, defining relationships, and taking different perspectives, is known as metacognition. The development of metacognition—which occurs from the conscious application of the Systems Thinking/DSRP rules—among learners of all ages is essential in education and beyond. This skill set leads to creativity, emotional intelligence, and critical thinking—all of which are highly sought after in preparing students for the real world and also strengthens students’ ability to transfer skills across fields.
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(National Research Council 2012; Joseph and Newman 2010; Briñol et al. 2006; Dean and Kuhn 2003; Litman 2009). Teaching Systems Thinking/DSRP facilitates thinking and understanding among students and creates the ability to apply these skills to any topic or issue.

Table 1. Summary of Systems Thinking Rules: D,S,R, & P

DISTINCTIONS

Individuals make distinctions when they identify any thing or idea, which creates a boundary that separates that thing from what it is not. The distinction rule is comprised of two interdependent elements, the identity and the other. “Identity” is the thing or idea that is being focused upon, while the “other” is whatever is not being subject to focus (i.e., all else). One’s cognition is improved through the identification and elimination of redundancy and heightened awareness of the perspectives implicit in all boundary-making. Note that when distinctions are made unconsciously, individuals remain unconscious of perspectives and the potential consequences of marginalizing the other.

SYSTEMS

This rule states that any idea/thing can be broken into parts or grouped into a whole—making use of the concept of reductionism and holism simultaneously. Systems are made up of part and whole. We become mindful that a whole can be broken into parts, which can also represent a different whole, which is made up of even smaller parts, and so on.

RELATIONSHIPS

The relationships rule states that an idea/thing can relate to any other idea/thing. The necessary interdependent elements for this rule are action and reaction, or cause and effect. Determining causality plays a large role in problem solving and can become oversimplified when unconsciously creating relationships. By being aware of the relationships we form, we emphasize webs of causality which reflect the complexity of the real world. Once an action and a reaction have been identified, their relationship must be defined. Many relationships are influential yet somewhat obscured within a system, making the relationships rule critical to systems thinking and DSRP problem solving.
**PERSPECTIVES**

Any idea or thing can be the point or the view of a perspective—this is the perspectives rule and it consists of two elements: point and view. A point is the idea/thing that is looking or focusing, while a view is the idea/thing that is being looked at or focused upon. In order to apply the perspectives rule in earnest, we must first acknowledge the fact that the reality we perceive is really just one way of framing information (i.e., a mental model). In fact, perspectives are embedded in every distinction, system, and relationship we identify. When it comes to problem solving, being able to identify perspectives and then consider alternative ones is a tremendous advantage for understanding and solving complex problems. When we change the way we look at issues, the issues we look at change.

DSRP is often presented as individual rules and presented in a particular order for ease of teaching and learning. However, distinction making and recognizing systems, relationships, and perspectives can occur simultaneously and in varying order. Once learners understand DSRP as the foundational building blocks of cognition, they can systematically apply each rule to explore new channels of thought marked by distinctions, systems, relationships, and perspectives not yet considered (Carlson 2013). Considering the perspective not yet adopted, the distinction not yet made, etc., is of tremendous utility not just for problem solving, but for brainstorming, innovation, and forecasting. This is particularly salient for the complex issues faced by CIPA Fellows and will allow them to contribute significant insights into the issues they will face as future leaders.

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**Laura Cabrera**

Laura Cabrera (PhD, Cornell) is currently Professor of Systems Thinking and Public Understanding at the Systems Thinking Institute (STI), senior scientist in the Cabrera Research Lab and visiting faculty at Cornell University Institute for Public Affairs where she teaches systems thinking and modeling and systems leadership in organizations. Over the past decade, Cabrera has applied her expertise in research methods and translational
research to increase public understanding, practical application, and dissemination of sophisticated systems science and systems thinking models. Cabrera is the acting Executive Director of ThinkWater, a USDA-funded initiative designed to implement systems thinking nationwide in water-based research, extension, and education. She was a senior researcher at Cornell University’s Family Life Development Center and has more than fifteen years of research and teaching experience at Cornell University, where she taught coursework on families and social policy in Cornell's Department of Human Development. Prior to her work at Cornell, Cabrera conducted research at the National Academy of Sciences Institute of Medicine, the U.S. Department of Health and Human Services, and the U.S. Department of Justice. She has authored five books including Systems Thinking Made Simple: New Hope for Solving Wicked Problems and Thinking at Every Desk: Four Simple Skills to Transform Your Classroom (Norton). Cabrera holds a PhD in Policy Analysis and Management, a Master's in Public Administration, and a bachelor's degree, all from Cornell University. She is a member of the United States Military Academy at West Point’s Systems Engineering Advisory Board. She specializes in translating cutting-edge research from the learning sciences for broad application—whether in corporations, schools, nonprofits, government agencies, or for parents interested in the psychosocial development of their children. Cabrera lives in Ithaca, NY, with her husband, Derek Cabrera, three children, and four dogs. View all posts