Use of System Archetypes to Accelerate, Advance, and Deepen Systems Thinking Skills of Nurses

Daniel J Pesut PhD RN FAAN
Professor of Nursing Population Health and Systems Cooperative Unit
Director of the Katharine Densford International Center for Nursing Leadership
University of Minnesota School of Nursing
308 Harvard St. SE
MPLS MN 55455
USA

Judith Pechacek, DNP, RN, CENP
University of Minnesota, School of Nursing
Clinical Associate Professor
Director, Doctor of Nursing Practice (DNP) Program
308 Harvard St. SE
MPLS MN 55455
USA
Outcomes

• Discuss selected systems thinking principles to appreciate the complexity of clinical health care dynamics.

• Discuss the 14 Habits of a systems thinker to develop a systems thinking mind set.

• Evaluate the use of systems archetypes and competing values to analyze and evaluate clinical issues and organizational challenges.
Future Work Force: Vital Skills

Sense making
Social intelligence
Novel and adaptive thinking
Cross cultural competency
Computational thinking
New media literacy
Transdisciplinarity
Design mindset
Cognitive load management
Virtual collaboration
Systems Thinking and Learning
Organizations

Systems Thinking
Shared Vision
Team Learning
Mental Models
Personal Mastery
THREE THINGS SYSTEMS THINKERS DO

1. THEY ARE METACOGNITIVE

Your Brain — 3 lbs., 100 billion neurons
100 quadrillion connections — processes information.

Everything on Google. Everything in books. Everything people say or do. Everything around us is information. The great thing about your brain is, any stuff you give it, it will process into a mental model (organized information that affects how we see the world). Organized stuff becomes usable knowledge. Structuring information is the same as thinking or “cognition.” That word is related to metacognition, which means “thinking about your thinking” or “neurons looking at neurons,” and systems thinkers do it all the time. Metacognition means knowing the various ways your brain structures or builds stuff, and recognizing that we perceive information through mental models. This calls into question accepted ideas and perspectives, and makes clear that mental models evolve and are approximations. Systems thinkers search out the often invisible mental models that drive behavior.

2. THEY USE THE 4 BUILDING BLOCKS (DSRP)

Our mind structures informational stuff (builds mental models) in four ways.

- **DISTINCTIONS (IDENTITY-OTHER)** They make distinctions (identity-other) between and among things and ideas. How we draw or define the boundaries of an idea or a system of ideas is an essential aspect of understanding. Whenever we draw a boundary to define a thing, that same boundary defines what is not the thing (the “other”). Systems thinkers consciously use distinctions to challenge existing norms, labels, and definitions and to identify biases in the way information is structured.

- **RELATIONSHIPS (ACTION-REACTION)** They identify relationships (action-reaction) between and among things and ideas. We cannot understand much about anything, including a system, without understanding how parts and wholes are related. Relationships come in all types: causal, correlation, direct/indirect, etc. Systems thinkers use relationships to show dynamical interactions between things and ideas, including feedback loops to show reciprocal relations.

- **SYSTEMS (PART-WHOLE)** They organize things and ideas into part-whole systems to make meaning. Systems thinkers know that changing the way ideas are organized changes meaning itself. The act of thinking is defined by splitting things up or lumping them together. Systems thinkers constantly consider context by asking “what is this a part of?” in order to see how things fit into larger wholes than is the norm.

- **PERSPECTIVES (POINT-VIEW)** They look at ideas from different perspectives (point-view) and understand that every time we make a distinction (including identifying relationships and systems), we are always doing so from a particular perspective. Systems thinkers use perspectives to rethink distinctions, relationships, and/or systems. They move beyond human or animal perspectives (i.e., “perspectives with eyes”) by taking conceptual perspectives (i.e., seeing a phenomenon from the perspective of an idea or thing).

3. THEY MIX & MATCH THE BUILDING BLOCKS

Even though the four patterns (DSRP) are very simple, the brain is very complex so it can do these four things simultaneously and in combinations that create amazing patterns of thought. Systems thinkers mix and match as follows:

- **Mix R and D**: make a relationship a distinction, which means to define relationships as ideas or things rather than just noting connections between objects

- **Mix R, D, and S**: after identifying relationships, “zoom into them” by reconstructing them into part-whole systems

- **Mix S and R**: compare the relationship between two wholes by comparing the relationships between their parts (i.e., a “Relationship Channel” or “R-channel”)

- **Mix P and S**: break down perspectives into sub-perspectives in order to avoid the homogenous perspective thinking error (i.e., assuming any group is characterized by a single perspective)

- **Mix P, S, R, and D**: see that distinct objects and ideas can be grouped/related in various ways according to a perspective, thereby avoiding thinking errors brought about by categorizing

- **Mix S and R**: see the organization of parts and the relationships between them in novel ways

- **Mix P, S, R, and D**: realize every complex topic or phenomenon is a massively relational, perspectival network where: (A) every relationship can be made a distinction and (B) where every element must be made a distinction, could be a system in and of itself, could be a perspective (point of view), and could be related to or the relationship between other elements
Systems thinking in Practice Doctoral education
Specialty practice - Improve Outcomes - Ensure Patient Safety

- American Association of Colleges of Nursing (AACN) outline eight foundational competencies - Doctor of Nursing Practice (DNP) Essentials that are required of all DNP graduates regardless of specialty: Essential II: Organizational and Systems Leadership for Quality Improvement

- 2004 AACN position statement stressed the importance of: 
  enhanced knowledge to improve nursing practice and patient outcomes

- The Institute of Medicine (IOM) and the National Research Council of the National Academies have called for...individuals for practice with interdisciplinary, information systems, quality improvement, and patient safety expertise

- IOM (1999, 2001, 2003) has focused on health care delivery, patient safety issues, health professions education, and leadership for nursing practice
Systems thinking in Practice Doctoral Nursing
Specialty Practice - Improve Outcomes - Ensure Patient Safety

• Utilize effective quality improvement tools
  – Archetypes
  – PDSA
  – Design Thinking
  – Lean Six Sigma

• Promote and apply best evidence at the bedside

• Develop and evaluate of models and systems of care

• Successfully implement organizational system change
  – Culture
  – Policy
  – Finances

• Educate future nurse leaders

• Promote and lead interprofessional practice models
Take Multiple Perspectives
See and Think Systems
The Habits of a Systems Thinker

Seeks to understand the big picture

Oberves how elements within systems change over time, generating patterns and trends

Recognizes that a system’s structure generates its behavior

Identifies the circular nature of complex cause and effect relationships

Makes meaningful connections within and between systems

Changes perspectives to increase understanding

Source: https://www.watersfoundation.org/systems-thinking-tools-and-strategies/habits-of-a-systems-thinker/  Creative Commons License
The Habits of a Systems Thinker

Surfaces and tests assumptions

Considered an issue fully and resists the urge to come to a quick conclusion

Considers how mental models affect current reality and the future

Uses understanding of system structure to identify possible leverage actions

Considers short-term, long-term and unintended consequences of actions

Source: https://www.watersfoundation.org/systems-thinking-tools-and-strategies/habits-of-a-systems-thinker/ Creative Commons License
The Habits of Systems Thinker

- Pays attention to accumulations and their rates of change
- Recognizes the impact of time delays when exploring cause and effect relationships
- Checks results and changes actions if needed: “successive approximation”

Creative Common License
Accelerate, Advance and Deepen Systems Thinking Skills of Nurses through Organizational Stories

System Archetypes Dynamics Leadership Class Assignment

Archetypes and System Dynamics

Classic Systems Archetypes

• Drifting Goals
• Escalation
• Fixes that Fail
• Growth and Underinvestment
• Limits to Success
• Shifting the Burden/Addiction
• Success to the Successful
• Tragedy of the Commons
• Accidental Adversaries
• Attractiveness Principle

“Positive” Systems Archetypes

• Plan for limits
• Strut your Stuff
• Collective Agreement
• Invest for Success
• Fixes that Work
• Bite the Bullet
• Stay on Track
• Cooperative Partners
• Win/Win
• Be Your Best

Archetypes Identified by Nursing Students

n=175 students

- Shifting the Burden: 81
- Accidental Adversaries: 44
- Growth and Underinvestment: 11
- Drifting Goals: 11
- Limits to Success: 22
- Escalation: 8
- Tragedy of the Commons: 7
- Success to the Successful: 3
- Fixes that Fail: 112
Fixes that Fail N=112

• All the quick fixes work at first but the problem keeps getting worse.

Shifting the Burden N= 81

- Know fundamental solution but unwilling to take it. Implement a symptomatic solution and deal with the side effects.


Bite the Bullet
Accidental Adversaries N= 44

- Each party is doing something that is undermining the other party’s success

Think ~Pair~ Share

✔ What concepts, ideas, or resources are most interesting and/or useful?

✔ How can the knowledge be used?

✔ Why is the knowledge important?

✔ Why care about the knowledge or information?
References and Resources


