



Systems Thinking in the Networked Age

A One-Day Course

Each age has distinctive challenges in critical thinking. Thriving in the networked age requires learnable thinking skills that address the greater scope and complexity of today's problems and opportunities.

As Grace Hopper once observed, "Life was simple before World War II. After that, we had systems." Narrowly focused analysis and decision-making were often sufficient when influences on personal activity were local and most decisions had limited scope. In today's world, systems thinking skills are frequently crucial whether making decisions in one's professional practice, contributing effort to a non-profit organization, analyzing an ecological issue, or investing in one's retirement.



The purpose of the course is to teach students practical approaches for addressing today's complex problems and situations. Although many of the analytical and creative techniques discussed in the course arose from systems engineering and are crucial to successful systems engineering practice, the course is taught from a layman's point of view.

Students will receive: a) Instruction: A variety of creative and analytic tools will be introduced. Numerous examples of pitfalls and practical challenges will be discussed in class. b) Course Notes: Each student will receive a set of course notes for reference. c) Practice: Students will have an opportunity to practice critical systems thinking skills in classroom exercises. d) Lunch: Lunch will be provided.

You should attend this course if you

- Need a larger portfolio of tools for understanding and solving complex problems
- Have a role in creating or analyzing systems formally or informally

The course is aimed at

- Engineers of all Disciplines
- Managers
- Individuals who need critical thinking skills to address today's problems

By the end of the course students will be able to:

- Analyze commonly encountered systems
- Understand the issues critical to managing complex system behavior
- Identify and analyze relevant paradigms
- Apply strategies for managing and exploiting surprise, "emergent," behavior
- Finesse limitations of the human mind in viewing and coping with complexity
- Understand why the natural process of human experience must cope with unknowns, how to identify them and work with them
- Understand the nature of human expertise and how to manage it
- Understand and apply the principles behind personal and organizational creativity
- Understand validation issues and processes

Attending the Course

When: October 17, 2009 8:30 am – 4:30 pm

Where: Santa Clara U. Bannon Eng., Rm: 137

Key Topics of the Course: Please see next page.

Tuition

Pre-Registered: **Member** \$175 **Non-Member** \$225 **Student** \$110

At the Door: **Member** \$225 **Non-Member** \$250 **Student** \$150

Space is limited. Early registration is recommended.

Pre-Registration: Accepted until 10/10

URL: <https://www.123signup.com/event?id=jvynd>



Key Topics Covered in the Course

Systems and their Discontents

- What is a system?
- How are systems described and viewed?
- The View/Model/Process approach
- Problems with today's systems
- Uncovering and repairing system misbehavior

Analyzing System Misbehavior

- Establishing a problem's "footprint"
- Looking for causal patterns
- Validating Hypotheses

Complexity

- What makes a system complex?
- How complexity feeds risk
- Using complexity to your advantage, honestly

Patterns and Paradigms

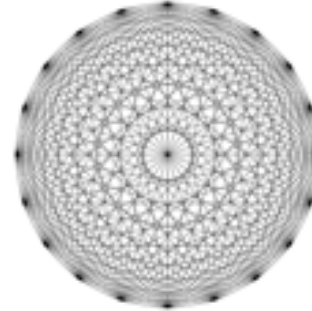
- How systems thinkers use patterns
- What's a paradigm and why are they both ubiquitous and often unacknowledged?
- What's a paradigm shift?
- Identifying personal and professional paradigms
- How paradigms support personal "realities"
- Why we so often encounter individuals with conflicting views and why this is good
- Why paradigms come with unknowns and what we can do about them
- How to characterize and manage expertise

Networked Computing, a Paradigm Shift

- Why networked computing is ubiquitous
- Consequences of a networked world
- Why conflict is increasing
- Emerging patterns in systems and systems thinking and how to make them work

The Dynamics of Systems

- Common Dynamic Patterns
- Analyzing Dynamics
- Creating Dynamic Models
- Complex Dynamics



Collaboration

- Existing and emerging collaboration patterns
- Systems of Systems
- Communities of Practice
- Working with differing points of view

Patterns in Creativity

- Personal Patterns in Creativity
- Creativity as a systems phenomenon
- How to make yourself and your organization more effectively creative
- Applying the principle of creative engagement

Validation

- Why validation is essential to critical thinking
- Why traditional approaches such as the scientific method have become more difficult
- Understanding measurement as a critical aspect of validation.
- Common techniques for validating knowledge
- Emerging approaches to validation

Dr. Scott Workinger, Ph.D, Stanford Engineering has 30 years experience leading people that create innovative, practical solutions to business problems and field working systems in a multi-disciplinary context. He currently teaches courses on technical leadership, systems architecture, test engineering, problem analysis, systems engineering, and systems thinking. The students in his continuing education courses come from a broad cross section of backgrounds and include experienced leaders and technologists from such diverse backgrounds as the US Navy, NASA, pharmaceutical companies, aircraft program management, and systems engineering consulting firms. Scott has a passion for empowering his students through research, application, and teaching. His teaching style emphasizes dialog and class discussion.

