

# Major Barriers to the Spread of Health Care Quality

- What is known about how improvements spread?
- Why does spread of improvement seem so problematic in health care organizations compared to other industries?
  - What can we do to enhance the likelihood of spread of a given improvement?

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“You cannot solve  
a problem using  
the thinking that  
got you there”

*Albert Einstein*



## *Some things that are likely to be true...*

- The presence of persistent problems indicates the need for new thinking.
- Every system is perfectly designed to get the results it gets. If we want different results, we must change the system.
- Radical transformation is necessary if we expect radically different results.
- If we want transformation, we must learn to see clearly the system we are in and be prepared to do something uncomfortable.

# The Road to the Future?



*Source: Gareth Morgan*

# Three Kinds of Systems

- Simple



- Metaphor: Baking a cake
- Follow the simple recipe and get the results.

- Complicated (*machine-like*)



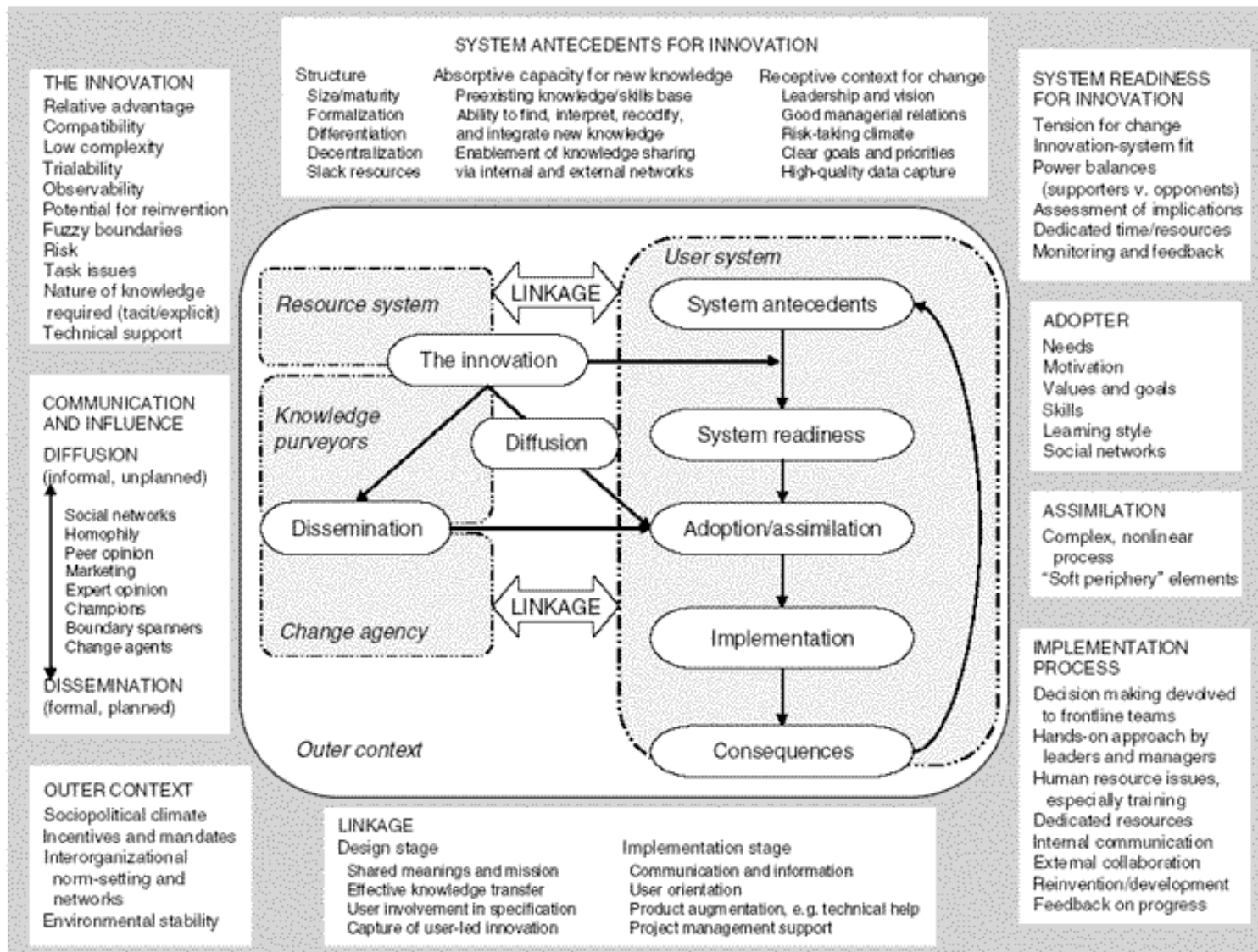
- Metaphor: Send a rocket to the moon
- Reliance on installation of technically correct solutions designed by experts.

- Complex (*organic*)



- Metaphor: Raising a child
- Appreciation of uniqueness, being adaptable, and staying tuned in to what is happening are key.

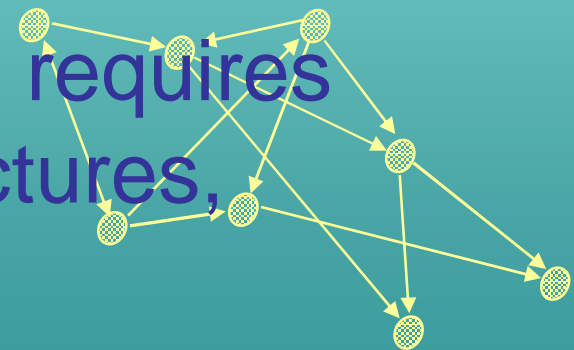
# Model resulting from systematic review of literature on diffusion of innovation by Greenhalgh et. al.



Greenhalgh T et. al. Diffusion of innovations in service organizations: Systematic review and recommendations. *Millbank Quarterly* 2004, 82(4):581-629. See also Greenhalgh T et. al. *Diffusion of Innovations in Health Services Organisations: A Systematic Literature Review*. London: Blackwell, 2005.

# Selected Characteristics of Complex Adaptive Systems

- Relationships and coordination among parts can be more important than the parts themselves.
- Behavior of the system can be largely explained by understanding “attractors.”
- Sustainable transformation requires integrated changes in structures, processes and patterns.



# Mintzberg's Six Basic Mechanisms of Coordination in Organizations

- Mutual adjustment
- Direct supervision
- Standardization of work processes
- Standardization of outputs
- Standardization of skills/professions
- Standardization of norms  
(what we collectively agree is "OK")

# Natural Coordination in Mintzberg's Various Organizational Types

- Direct supervision
- Standardization of work processes
- Standardization of outputs
- 1 Standardization of skills/professions
- 2 Mutual adjustment
- 3 Standardization of norms  
(what we collectively agree is "OK")

Professional  
Organizations

# Natural Coordination in Mintzberg's Various Organizational Types

Simple-  
Machine-like,  
& Diversified  
Organizations

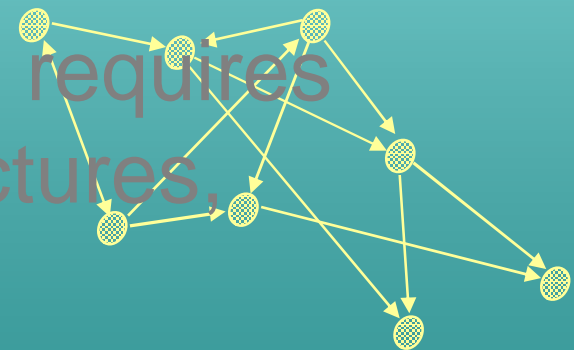
- Direct supervision
  - Standardization of work processes
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Professional  
Organizations

- 2 Mutual adjustment
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# Selected Characteristics of Complex Adaptive Systems

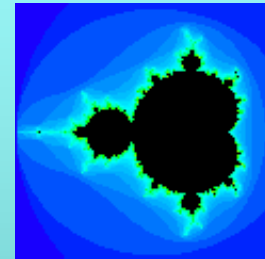
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# “Attractors” in Complex Systems

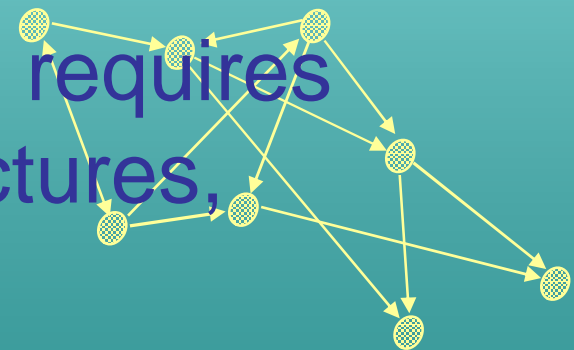
- In chaos mathematics, the often surprisingly simple description that lies behind a complex or chaotic phenomenon
- Psychologists tell us that often simple-to-state “attractors” lie behind much of human behavior (e.g., identity, sense of self worth, affiliation needs, altruism)
- Simply stated: “Why people do what they do”

$$z \rightarrow z^2 + C$$



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# Examples of SPP

- **Structures** include: policies, regulations, guidelines, roles, committees, physical space, equipment, resources, etc.
- **Processes** include: guidelines, procedures, protocols, etc.; any “flow” of people, information, supplies, thought, etc. that can be captured on a flow diagram
- **Patterns** include: simple rules, behaviors, relationships, how decisions are made, power, conflict, learning, etc.

# Medication Administration System

## Structure

Pharmacy  
Nursing units  
Elevators  
Committees  
Info systems  
Individual roles  
Guidelines/policies  
Etc.

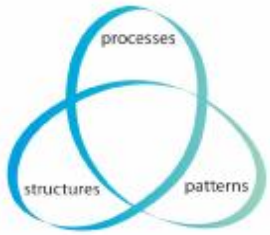
## Process

Ordering  
Transcribing  
Entering  
Dispensing  
Etc.

## Pattern

Prescribing practices  
# & types of errors  
Feelings & values  
Supportive behavior  
Blaming  
Fear  
Conflict avoidance  
Etc.



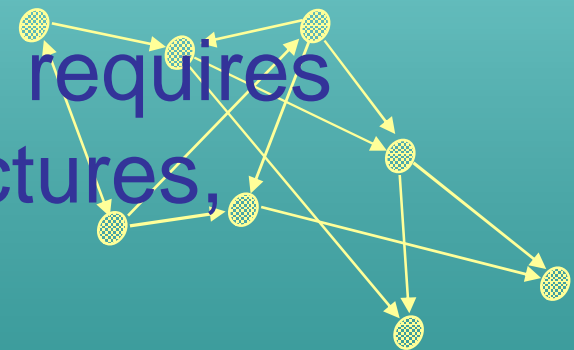


# Structure, Process, Pattern in Organizational Change Efforts

- Key Point: Successful large-scale transformation requires integration and change in structures, processes, and patterns
- We often make structural changes without corresponding process and pattern changes
- We can make process changes and overlook the need for structural supports
- We often shy away from addressing underlying patterns of behavior and organizational culture; and this can undermine everything

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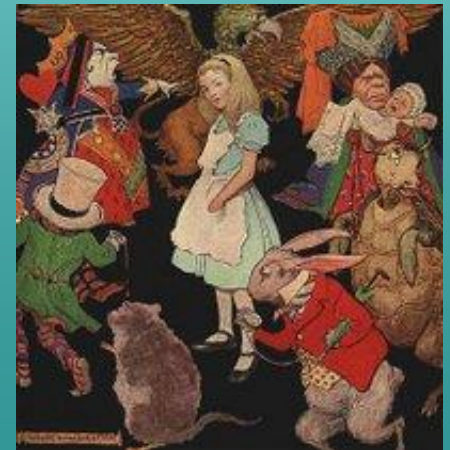


# Major Barriers to the Spread of Health Care Quality

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# Allegheny General Hospital: Through the Looking Glass (...of a complexity lens)

- Review of Shannon RP et.al. Using real-time problem solving to eliminate central line infections. *Jt Comm J Qual Pt Safety* 2006; 32(9):479-487.
- Key actions and observations about success can be described retrospectively via complex systems thinking
- Implications for proactively planning implementation and spread of improvement?



# Allegheny General Hospital: Through the Looking Glass (...of a complexity lens)

- AGH actions: Real-time analysis of issues as they arise and reporting of infections in clinical terms “replete with dire consequences”
- Complexity lens:
  - **Attractors:** self-worth based on view of professional competence and helper of others; dissonance creates desire to act
  - **Coordination:** works with natural coordination by skills/professionalism and mutual adjustment
  - **Patterns:** learning with emotional content, constructive conflict



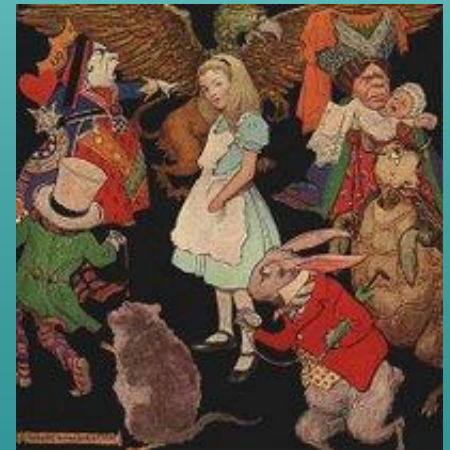
# Allegheny General Hospital: Through the Looking Glass (...of a complexity lens)

- AGH actions: Standardized protocols, kits, etc. as a result of analysis and actions by teams
- Complexity lens:
  - **Coordination:** seems to be coordination of processes, but note that this was achieved via coordination by skills/professionalism and mutual adjustment
  - **Patterns:** new patterns of learning, decision-making, and conflict *internal* to the teams; not externally imposed



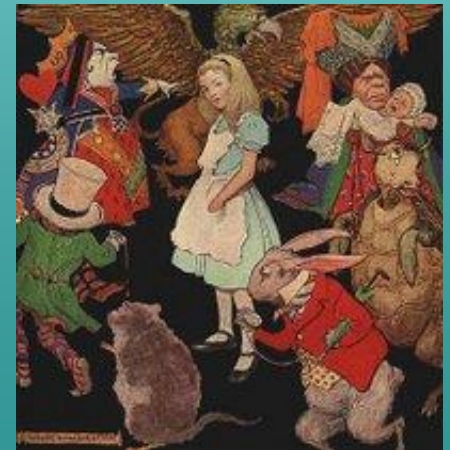
# Allegheny General Hospital: Through the Looking Glass (*...of a complexity lens*)

- Commentary: “AGH had to contend with issues of status and hierarchy...” (p485)
- Complexity lens:
  - Patterns of power can get in the way; especially when supported by patterns of conflict avoidance and strong attractors around professional identity
  - Via real-time analysis of issues, AGH surfaced conflict rather than allowing it to be avoided.  
(Apparently, this was done in a way that was consistent with self-image attractors; i.e., persons involved were allowed to maintain their self-image through the process)



# Allegheny General Hospital: Through the Looking Glass (*...of a complexity lens*)

- Commentary: “...the continuous struggle between standardizing practice and the fierce adherence to physician autonomy that constitutes a significant barrier to patient safety efforts in organized medicine...” (p485)
- Complexity lens:
  - Allow standardization to emerge from natural coordination by professionalism and mutual adjustment
  - Problem if imposed by direct supervision or direct attempts at standardization (as these are unnatural coordination mechanisms in Professional Organizations)
  - Must create new structures, processes and patterns to support this



# Implications for Spreading Improvement

- **Temptation:** We developed transformation via attention (albeit, intuitive) to coordination by professionalism, patterns, attractors, etc.; now let's seek to spread them by direct supervision, coordination of processes, imposed patterns, and me telling you why you should do this
- **Moral of the story:** No short-cut, complex systems have to evolve and work through their own issues (cf. raising children)
- **Advice:** Seek to spread *first* the process of seeing the system and doing something uncomfortable and unfamiliar; perhaps using the specific changes as cases
- **Prediction:** Seeking to forcibly spread specific changes is unlikely to result in transformation

# Complexity-Informed Spread: Considerations

- Attend to evidence on spread (see Greenhalgh *et. al.*)
- Identify involved stakeholders (those who must make it happen, actively support it happening, or let it happen)
- What are their natural attractor patterns? How can we either appeal to, create dissonance around, or challenge these?
- How can we work *with* coordination by professionalism, mutual adjustment, and norms to create conditions for change? What structures, processes and patterns can we create to support this?
- What structures, processes, and patterns work against us and what can we do about that?
- What are our natural patterns of learning when knowledge comes to us from outside? How can we either work with these or constructively challenge them?

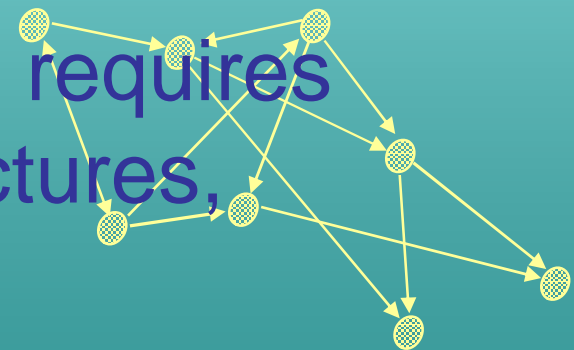
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## References...

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# SPP Compared to Donabedian

- The two approaches are highly complementary
- Both highlight structures and processes
  - Classic Donabedian QA focuses mainly on clinical structures and processes
  - Our approach considers structures and processes more generally
- Both highlight patterns...
  - But classic Donabedian QA looks mainly at one type of pattern – measurable outcomes
  - Donabedian saw outcomes mainly as the “effect” that resulted from structures and processes
  - Our approach includes patterns of outcome, but focuses mainly on behavioral patterns in human systems
  - We see structures, processes and patterns as a complex web of mutual cause and effect