13th International Conference on Knowledge Management
Dallas Fort Worth Marriott Hotel & Golf Club Resort, Texas

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Complex Adaptive Team Systems (CATS)

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Systems

Open –vs– Closed Systems

Systems Theory

Complex Adaptive Systems

Complexity Theory

Complex Adaptive Team System (CATS)
### Open –vs– Closed Systems

<table>
<thead>
<tr>
<th>Closed Systems</th>
<th>Open Systems</th>
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<tr>
<td>Linear</td>
<td>Non-Linear</td>
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<tr>
<td>Predictable</td>
<td>Non-Predictable</td>
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- Closed Systems: Linear, Predictable, Presents Simple Problems
- Open Systems: Non-Linear, Non-Predictable, Presents Complex & Wicked Problems
Systems theory

Input – Process – Output

Changes in one part of the system effects other parts of the system.

The system is the sum of the parts.

Changes are generally predictable.
Complex Adaptive Systems

“Interdependent agents that interact, learn from each other, and adapt their behaviors accordingly.”
(Beck & Plowman, 2014, p. 1246)

The building block for higher level agents or systems while continuously adapting to environmental changes.
(Bovaird, 2008)
CAS - Characteristics

- Non-Linearity
- Open System
- Feedback Loops
- Scalable
- Emergence

- Contains many constituents interacting non-linearity.
- Open in which boundaries permit interaction with environment.
- Contains Feedback loops.
- Structure spanning several scales (fractal structures).
- Emergent behavior
Complexity Theory

“Targets a sub-set of all systems; a sub-set which is abundant and is the basis of all novelty; a sub-set from which structure emerges.... That is, self-organization occurs through the dynamics, interactions and feedback of heterogeneous components.”

(Strathern & McGlade, 2014, p. 12; see also Allen, 2007)
Characteristics of Complexity Theory

- Interactions
- Non-linear Distributive Patterns
- Interdependent/Autonomous Agents
- Emergence
- Self-Organizing

- The Driver of Emergence (the level of analysis)
- Changing Patterns of Order
- Agents Interact & Bounded by Objectives
- Reformation of Existing Structures (challenges the status-quo)
- Adaptive (able to react to environment)
CAS

Typical Representation of CAS.

What does the structure of a CAS look like?
TELDE
The Team Emergence Leadership Development & Evaluation Model
(Turner & Baker, 2017)
(Romine, Turner, & Baker, 2017)
CAS

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Multi-Teams
The TELDE Model Utilized in a Multi-team Setting becomes a CATS.

Interactions Drive Emergence.
• For the CATS model, interactions are the level of analysis.
CATS – Network Model
Management’s Role

Management must:

• **Create the structure and interactions** of which CAS/CATS operate in, allowing them to self-organize and emerge. (Boal & Schultz, 2007)

• **Be a participant** in the flow of events.

• Make available organizational **resources** while releasing control of the CAS/CATS system, allowing the system to self-organize and emerge into a new order. (Campbell-Hunt, 2007)
Thank You. Questions?

Today’s new leadership is best identified as being capable of influencing “existing dynamics in and of a system.”

(Hunt, Osborn, & Boal, 2009)