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Strategy Deployment
Business Process Reengineering
Leadership Development
Organizational Change

At The Forefront

this issue

Challenges of reengineering in a complex adaptive system environment compared to an ordered system environment.

Ordered vs Complex Adaptive Systems

Ordered

- **Predictability:** Outcomes can be forecasted with a high degree of accuracy.
- **Stability:** Maintain a relatively constant state over time.
- **Clear Structure:** The relationships between components are explicit.
- **Regular Patterns:** Allows for a clear understanding of cause-and-effect relationships.
- **Linear Relationships:** Changes in one part of the system lead to proportional and predictable effects.
- **Low Complexity:** Compared to complex and chaotic systems.
- Cause-and-effect: Relationships are clear and direct.

Complex Adaptive

- **Emergence:** Novel and unexpected patterns arise from interactions of elements.
- **Non-linearity:** Cause and effect is not proportional or straightforward.
- **Adaptability:** Have the ability to adapt and evolve in response to change.
- **Self-Organization:** Order and structure spontaneously emerge.
- **Feedback Loops:** Create dynamic interactions that influence future behavior.
- **Distributed Control:** Local interactions contribute to global patterns.
- **High Complexity:** Due to the large number of interconnected components and the diversity of interactions.

Understanding a complex adaptive system requires a holistic perspective that considers the interactions and relationships between components rather than focusing solely on individual elements. The system is more than the sum of its parts.

It Worked Then But Will It Work Now?

Introduction:

Many practitioners of improvement science and process reengineering earned their chops in an ordered systems environment. Ordered systems operate in a structured and predictable framework, characterized by clear hierarchies, defined processes, and well-established cause-and-effect relationships. This type of system emphasizes standardization, optimization, and efficiency, often relying on established methodologies, procedures, and hierarchical decision-making structures. My introduction to improvement science and process reengineering was developed in manufacturing, where stability and consistency are prioritized over adaptability and responsiveness to change. Yet, our world continues to venture into higher degrees of complexity. As practitioners of improvement science and process reengineering face the challenge of adapting to rapid changes in technology, market trends, and customer expectations, the required approach may vary significantly depending on the system the organization operates within.

I recall my early transition from manufacturing to healthcare. Opposites on the ordered vs complex adaptive systems spectrum. It took me almost two years to lose my ordered systems paradigm and embrace the nuances of complex adaptive systems. In this article, we explore the nuances of process reengineering in these two distinct environments.

Understanding Complex Adaptive Systems:

In contrast to ordered systems, complex adaptive systems (CAS) are characterized by their dynamic, interconnected, and unpredictable nature. Examples include healthcare, markets, ecosystems, and social networks. In CAS, individual components (agents) interact in a nonlinear manner, leading to emergent behaviors and patterns that are often challenging to predict.

BRADLEY SCHULTZ & ASSOCIATES
At The Forefront

Principles for Successful Project Management in a CAS Environment

• A detailed understanding of the system, its interdependencies, and interactions before making improvements is crucial to avoid unwanted side-effects.

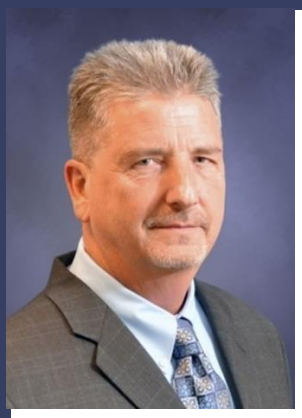
• Improvement attempts that fail to consider the above complexities rarely yield positive results, are often harmful, or result in trade-offs, such as time savings at the expense of quality.

• Improvement in a non-constraining component of a complex system will give you nothing in terms of the overall system performance.

• Improvement in a constraining component of a complex system will only give improvement of the system up to the next constraining component.

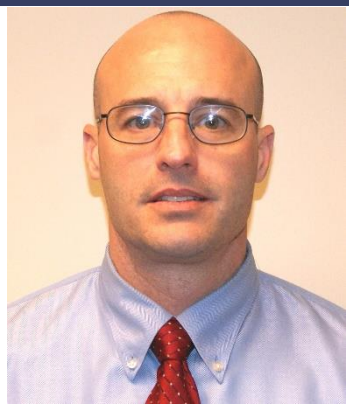
• The reliability of a system is at best, the multiplicative of the reliability of the respective subcomponents

• Because of the highly interdependent nature of complex systems, continuous, incremental, process improvement is highly ineffective, instead each step requires complete realignment of the pieces and so transformational moves are far more efficient.



The Authors

Bradley (Brad) Schultz and Dr. Martin (Marty) Lucenti co-authored this month's Newsletter. Brad and Marty have been colleagues for over 15 years. Both have deep experience in complex adaptive systems. Together, they have redesigned the Emergency Departments of over 35 hospitals. They were creating in many of them wait-free performances.



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Flexibility and Emergence:

The application of improvement science and process engineering in CAS requires a flexible and adaptive mindset. Unlike ordered systems, where processes are predefined and linear, CAS demands a more iterative and emergent approach. Organizations must be open to experimentation, learning from feedback, and embracing the unexpected outcomes that may arise during the reengineering process.

Decentralized Decision-Making:

In CAS, decision-making is often decentralized, reflecting the distributed nature of interactions. Reengineering efforts need to account for the diverse perspectives and decentralized decision-making structures within the organization. Collaborative and participatory approaches are crucial to successfully reengineer processes in a way that aligns with the dynamic nature of the system.

Continuous Learning and Feedback:

Reengineering in CAS involves continuous learning and adaptation. Without establishing mechanisms for ongoing feedback and real-time data analysis, the identification of opportunities for ongoing and next-level improvement become elusive. Reengineering efforts must remain responsive to the ever-changing dynamics.

What I Had To Learn and Unlearn:

In contrast to CAS, the ordered systems environment I began my journey in was characterized by stability, predictability, and clear cause-and-effect relationships. Improvement and reengineering efforts followed a more structured and linear path, using well-established methodologies. Efforts focused on clearly defining processes, eliminating inefficiencies, and standardizing.

Moving away from that, in CAS, I had to develop the flexibility to understand that predictability and case-and-effect relationships become more challenging as the system is in a continuous state of emergent learning and adaptation. This also means that the approach to standardization becomes contextual. Creating repeatable and predictable outcomes, becomes less about rigid application of well-established methodologies and more about gaining a deep understanding of interactions and constraints.

Improvement as a result relies upon the ability to leverage real-time monitoring to recognize patterns and potential outcomes, identifying the most influential variables within the system, and providing various scenarios in anticipation of possible outcomes under different conditions. This allows for adjustments and interventions as needed to steer the system towards