LEARNING HEALTH SYSTEMS – A SELF-ORGANIZATIONAL PATH TO SUCCESS

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“Even small healthcare institutions are complex, barely manageable places... Large healthcare institutions may be the most complex organizations in human history.”
BOX 9-3
Ultra-Large-Scale (ULS) System Characteristics

The ULS approach can be best described by a set of characteristics that tend to arise as a result of the scale of the system (in this case health and health care) rather than a prescriptive set of required components. Previous work on the ULS concept has identified the following key characteristics of ULS systems:

Decentralization: The scale of ULS systems means that they will necessarily be decentralized in a variety of ways—decentralized data, development, evolution, and operational control.

Inherently conflicting, unknowable, and diverse requirements: ULS systems will be developed and used by a wide variety of stakeholders with unavoidably different, conflicting, complex, and changing needs.

Continuous evolution and deployment: There will be an increasing need to integrate new capabilities into a ULS system while it is operating. New and different capabilities will be deployed, and unused capabilities will be dropped; the system will be evolving not in phases, but continuously.

Heterogeneous, inconsistent, and changing elements: A ULS system will not be constructed from uniform parts; there will be some misfits, especially as the system is extended and repaired.

Erosion of the people/system boundary: People will not just be users of a ULS system; they will be elements of the system, affecting its overall emergent behavior.

Normal failures: Software and hardware failures will be the norm rather than the exception.

New paradigms for acquisition and policy: The acquisition of a ULS system will be simultaneous with the operation of the system and require new methods for control.

SOURCE: Northrop et al., 2006.
“CHAORDIC” = THE EDGE BETWEEN CHAOS & ORDER

THE CHAORDIC ORGANIZATION: OUT OF CONTROL AND INTO ORDER

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by Dee W. Hock

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3 EXAMPLES

- Visa
- Internet
- VA
“If we’re not making mistakes, we’re not at the edge.”

Kenneth W. Kizer, MD
Under Secretary for Health
Department of Veterans Affairs
1994-1999
“Try, fail.
Try, fail.
Try, succeed, deploy.”

William Stead, M.D.
Associate Vice Chancellor for Health Affairs &
Chief Strategy and Information Officer
Professor of Medicine and Biomedical Informatics
Vanderbilt University
Appendix B

Redesigning Health Care with Insights from the Science of Complex Adaptive Systems

Paul E. Piesch

The task of building the 21st-century health care system is large and complex. In this appendix, we will lay a theoretical framework for approaching the design of complex systems and discuss the practical implications.

SYSTEMS THINKING

A “system” can be defined by the coming together of parts, interconnections, and purpose (see, for example, definitions proposed by von Bertalanffy [1968] and Capra [1996]). While systems can be broken down into parts which are interesting in and of themselves, the real power lies in the way the parts come together and are interconnected to fulfill some purpose.

The health care system of the United States consists of various parts (e.g., clinics, hospitals, pharmacies, laboratories) that are interconnected (via flows of patients and information) to fulfill a purpose (e.g., maintaining and improving health). Similarly, a thermostat and fan are a “system.” Both parts can be understood independently, but when they are interconnected, they fulfill the purpose of maintaining a comfortable temperature in a given space.

The intuitive notion of various system “levels,” such as the microsystem and macrosystem, has to do with the number and strength of interconnections between the elements of the systems. For example, a doctor’s office or clinic can be described as a microsystem. It is small and self-contained, with relatively few interconnections. Patients, physicians, nurses, and office staff interact to produce
The answer is to create the conditions for self-organization through simple rules under which massive and diverse experimentation can happen.

Simple rules for human CAS tend to be of three types: (1) general direction pointing, (2) prohibitions, and (3) resource or permission providing. A good set of simple rules might include all three types.
…we believe it would be critical to adopt a suite of conditions for trusted exchange (CTEs) to serve as the “rules of the road” for trusted, secure, and interoperable electronic exchange, nationwide.

CTEs appear to best be grouped into three categories: safeguards, interoperability, and business practices.

**Question 8:** We solicit feedback on the appropriateness of ONC’s role in coordinating the governance mechanism and whether certain responsibilities might be better delegated to, and/or fulfilled by, the private sector.
SUMMARY POINTS

• **Self-organizing takes leaders** (especially at the beginning)
  • A different type of leadership – NOT the traditional command-or-control

• **Farming vs. construction**
  • Grow, not build

• **A few simple rules/boundaries**