Three Types of Systems Necessary in a Systems View

by Donald Winiecki

Tales from the Field, a monthly column, consists of reports of evidence-based performance improvement practice and advice, presented by graduate students, alumni, and faculty of Boise State University’s Instructional and Performance Technology department.

HPT Takes a Systems View

When practicing human performance technology (HPT), it is imperative to take a systems view. The term, a systems view, may trigger you to think of several adjectives such as holistic, integrated, or total. However, if you have difficulty providing a more comprehensive explanation as to what a systems view might look like, it is a good reason to turn your attention to seeking additional knowledge about a systems view. In this case, organizational sociology is a good source for learning about different types of systems. An introduction to different types of systems may help you as an HPT practitioner to better understand what might constitute a systems view.

Three Types of Systems

There are three basic types of systems which we may encounter – (a) rational, (b) natural and (c) open (Scott & Davis, 2007).

[1] Rational systems are perhaps the most common organizational type, owing to their creation at the origin of modern organizations in the mid 19th century with the then popular idea that organizations were like machines with parts that could be individually engineered and then assembled into more complex apparatuses (Hoskin & Macve, 1994). Frederick Taylor’s ‘scientific management’ is perhaps the most recognizable example of rational systems ideology. With links between ideas in scientific management and Gilbert’s formulations (Chyung, 2005), we have reason to say that the very foundation of HPT is also affected by these ideas.

Rational systems are at their strongest when the operating characteristics of an organization and all components of the surrounding systems can be controlled. While Frederick Taylor’s ideas were mostly limited to workgroups and corporate systems, he promoted his ideas to the U. S. Congress in an effort to have it impose controls on society so that scientific management could work its hypothetical magic (Taylor, 1972). However, when internal or external conditions change beyond the ability of a rational system to be adapted, it becomes weaker. In such a case, the rational system may at best simply remain efficient at doing things that no longer have to be done.

[2] Natural systems follow Elton Mayo’s ‘human relations’ school of management, which in turn was partly based on the theory that organizations (and societies) are like organisms with multiple components similar to organs in a metaphorical body. In order for the organization/body to thrive, each component/organ must adapt so that it can fulfill its role even as the overall organism adapts to changes from its environment. The idea is similar to Spencer’s concept of social-evolution (Adams & Sydie, 2002) where each component must adapt to remain fit; otherwise it fails in terms of the surrounding ecology.
Natural systems became more prevalent following WW2 when countries tried to rebuild themselves even with limited numbers of able-bodied individuals. Great Britain turned to academics at the Tavistock Institute who developed counseling-based practices such as the ‘T-group’, and where techniques of team work and team-based innovation were developed to keep workers motivated, productive and somewhat self-managing even through very difficult times. TQM, process improvement, and other recent innovations arose from natural systems ideas.

Natural systems are at their best when knowledge and skills of members can be applied to the creation and maintenance of systems responsive to and responsible for their members and surrounding social system. However, when individuals turn inwardly and exert more effort pursuing their own interests rather than adapting the system to changing conditions, natural systems begin to falter.

[3] Open systems concepts arose from the work of biologist Ludwig Von Bertalanffy who characterized open systems as complex, mutually affecting units (Bertalanffy, 1972). A full understanding of high-level complex open systems is still beyond our ability. At their most basic, however, open systems operate as ‘closely coupled’ cybernetic systems like a thermostat programmed to respond to certain inputs from its environment. Scott and Davis (2007) indicate that fairly simple cybernetic systems typify virtually all of our current efforts to imagine and produce open systems. This is because we simply don’t know all of the factors and interrelations which might affect an organization within a social system. Even our most ‘open’ open systems models are cybernetic based on limited knowledge rather than knowledge and understanding of the entire ecology. Cybernetic systems can produce problems when factors unaccounted for begin to affect other subsystems and their members.

Additionally, realization of complex open systems is limited by inertia of an orientation to economically-bounded ideas which rest on rational and natural systems concepts. Attempts to control the environment using only rational and natural systems ideas are often problematic within complex open systems, which are typified by overall adaptation rather than control by one set of interests.

So What?

It is important that HPT practitioners be aware of the types of systems they may encounter when using a systems view during their work. While each of these types has its strengths and weaknesses, none is universally best. A systems view appropriately includes all three and HPT practitioners should help organizations become less like only one of these three types and instead more like a pragmatic blend. Core processes on which an organization relies may be similar to the rational system type. Natural systems can be refined to buffer these core processes from drastic changes from the outside, while at the same time involving ongoing efforts to adapt those rational systems to cope with changing needs. Open-system concepts would be useful in guiding strategic and outward looking elements of a subsystem or an entire organization while at the same time providing information to the natural systems that exist within the organization.
REFERENCES


AUTHOR BIOGRAPHY

Don Winiecki is a professor in the Instructional & Performance Technology department at Boise State University. Don teaches courses in Needs Assessment and Ethnographic Research in Organizations. He holds a doctor of education degree in Instructional Technology and a doctor of philosophy degree in Sociology.