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# Learning Leadership is a Complex System Problem

Larry M. Starr

Learning leadership in higher education can be framed as a system. A system is a metaphor and model of reality with a *structure* consisting of inputs, transformation process with an internal context, outputs, feedback loop, and with the whole system influenced by an external context, environment or containing system. Figure 1 is a system; Figure 2 is a leadership learning system (Starr, 2020b).<sup>1</sup>

Figure 1. System

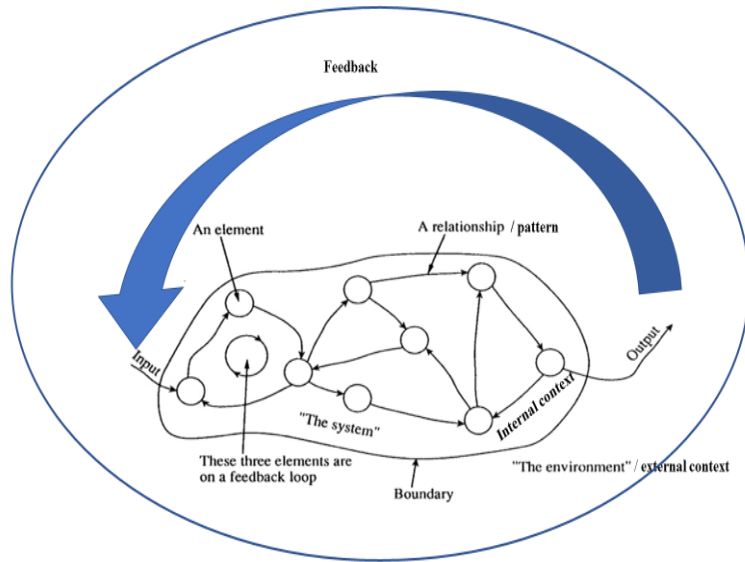
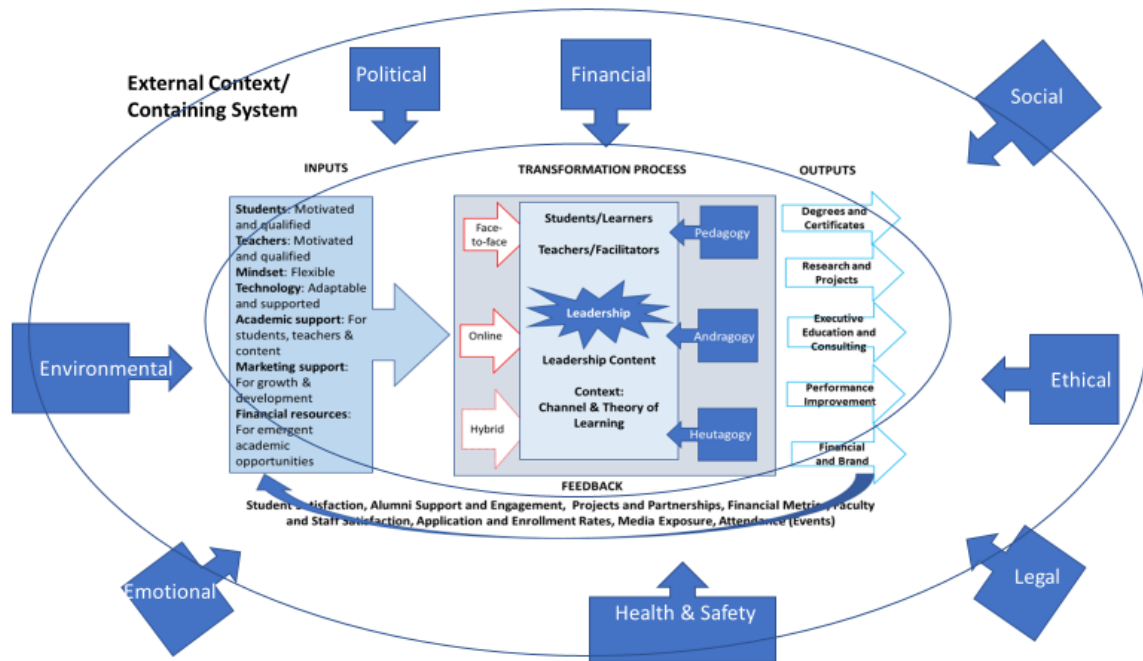


Figure 2. Leadership Learning System



In higher education, the system *inputs* are students, teachers, technology, resources, ideas and other elements that are assembled for education programs. The *transformation process* concerns interactions and interdependencies among characteristics and properties of students x teachers x leadership content x context. The *internal context* refers to the academic characteristics which includes the channel or mode of communication, e.g., face-to-face, virtual and hybrid/blended; and the theory of learning which includes pedagogy, i.e., content based, teacher-directed and dependent; andragogy, i.e., self-directed, independent, and problem based; and heutagogy, i.e., self-determined, interdependent, and practice based. The *outputs* include alumni with academic credentials designating their learning, as well as scholarship, research, and leadership applications generated by the interactions among the elements. The system's *feedback loop* allows outputs to influence the inputs through adaptation, accommodation, motivation, and availability of resources. The containing *external context* refers to the many characteristics that support, conflict with and obstruct the overall system of learning. These include political events such as a national election; health and safety events such as illness or accident; social and financial events such as losing one's job or separation from a social support system, and more. When the context in which learning takes place is complex and turbulent, leadership learning is disrupted as reported by the United Nations (2020<sup>2</sup>),

The COVID-19 pandemic has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Closures of schools and other learning spaces have impacted 94 per cent of the world's student population... Similarly, the education disruption has had, and will continue to have, substantial effects beyond education. Closures of educational institutions ... affect the ability of many parents to work ... and as fiscal pressures increase, and development assistance comes under strain, the financing of education could also face major challenges, exacerbating massive pre-COVID-19 education funding gaps (p. 2).

The learning leadership system operates in a complex context which means learning leadership is a complex system problem. Vandebroek (2015<sup>3</sup>) noted that in the natural sciences, complexity, "when correctly viewed (enables one to see) ... simplicity; to find pattern hidden in apparent chaos (Simon 1996:1)." However, when complexity exists in social sciences, management and leadership, this model of thinking is inadequate to address complex problems. For this reason, "systems thinking (emerged as) a rebellion against the objectionable habit of reductionist sciences to suppose that there is always some order hiding behind the disorder of the visible world (p. 5)."

Systems thinking is recommended as the only appropriate response to complexity (Jackson, 2019<sup>4</sup>). Systems approaches can be applied to frame and understand the complex system of learning leadership, and to inform methodologies and tools that lead to improvement. While this may seem obvious, too often this does not occur. Instead, analytic thinking is applied because it is believed that the problem of learning is orderly, predictable and complicated. This is a cognitive confusion because a system problem in a complex context is qualitatively different from one in a complicated context. As explained by Goldstein, Hazy and Lichtenstein (2010<sup>5</sup>):

Until recently the differences between complicated and complex were not well understood; as a result, they have often been treated in the same way, as if the same

process should be used to “deal with” situations (or concepts) that are complicated or complex. Business schools justified this by treating organizations as if they were machines that could be analyzed, dissected, and broken down into parts. According to that myth, if you fix the parts, then reassemble and lubricate, you’ll get the whole system up and running. *But this is exactly the wrong way to approach a complex problem* (p. 3).

More than 50 systems thinking approaches, theories, models, and proficiencies for formulating problems and operating in complex contexts have been summarized by Ramage and Shipp (2009<sup>6</sup>), and Jackson (2003<sup>7</sup>; 2019<sup>4</sup>) has provided in-depth descriptions and evaluations of a system of system categorization for ten system approaches applicable for leadership. Table 1 summarizes some of the differences between addressing leadership learning from an analytic compared to a systemic perspective.

Table 1. Comparing Mode of Thinking About Learning Leadership

	Analytic/Analysis	Systemic/Systems
Reasoning	An explanation of leadership is derived from an explanation of the role of parts - primarily competencies that add up to leadership.	An explanation of leadership is derived from explaining interactions within and between the elements of the transformation process and the influences of the organizational system.
Explanation of Cause	<b>Cause and Effect:</b> Leadership is primarily context/environmental-free, linear, additive with predictable effects (outcomes) following from well-defined causes.	<b>Producer-Product:</b> Leadership is context/environmental-full/rich, non-linear, non-proportional, not predictable with co-produced and emergent characteristics.
Relationships of Elements	<b>Linearity and Proportionality:</b> A change to one element of the input/cause creates a direct change in the output/effect at a constant rate that is predictable and sequential.	<b>Nonlinearity and Nonproportionality:</b> Changes made to the input/influence are not proportional to the output/emergent effects and may appear unpredictable, nonlinear and counterintuitive.
Problem Solving Methodology	<b>Research:</b> Science and evidence-based thinking using inductive and deductive reasoning (and reductionism) can solve a problem by generating a solution that meets the objectives and creates an optimal solution.	<b>Design:</b> Design, creativity and innovation using abductive reasoning (and expansionism) can lead to emergence of a novel configuration that can dissolve the problem and create conditions where the problem cannot occur.

### Heutagogy for Leadership Learning

Gerstein (2014<sup>8</sup>) suggests an analogy between the development and evolution from Web 1.0 to 2.0 and now to 3.0, and what she describes as Education 1.0 (pedagogy), 2.0 (andragogy) and 3.0 (heutagogy). She writes that “many educators are doing Education 1.0 and talking about doing Education 2.0, when they should be planning and implementing

Education 3.0 (p. 84).” Heutagogy is a learning theory described only 20 years ago and increasing in its development and range of applications. In their seminal publication, Hase and Kenyon (2000<sup>9</sup>) argued that the 21st century learner must become responsible not only for how to learn but also for what to learn. While in andragogy, a learner may demonstrate self-direction by deciding how to learn the presented content objectives in a leadership course, in heutagogy the curriculum itself can be decided by the learner. Heutagogy, as self-determined learning, places the learner in the center of the teaching and learning process such that he/she is an active agent in the whole learning experience from planning and executing to assessment of what has been learned (Hase & Kenyon, 2013<sup>10</sup>). Active agency and 21st century proficiencies are what emerging leaders must gain and acting leaders must demonstrate. That the learner is active means that the learner questions and decides *if the topic itself* is being formulated properly, *if a different mindset* is required to understand the complicated or complex characteristics of a topic, and *if the content, methodologies or tools provided* are appropriate to solve or dissolve the problem.

Hase (2014: 103<sup>11</sup>) suggested that a learner engaged in heutagogy was more effective when a set of proficiencies was developed. Rather than focusing on so-called 21<sup>st</sup> century skills, he argued for proficiencies necessary in the 21<sup>st</sup> century context, i.e., the complex learning environment necessary to support and develop leadership. His suggestions were (1) capacity to accept and manage ambiguity; (2) ability to foster engagement; (3) capacity to learn; and (4) ability to use open systems thinking.

Heutagogy is important for more developmentally mature people; those who evaluate learning more systemically and with more consideration of context. This extends the process into the realm of emergent capabilities-based learning rather than pre-defined competencies-based (andragogy) or pre-defined content objectives-based (pedagogy). This means that heutagogy is an important theory of learning leadership for master-and-doctoral-level programs that have a requirement for a thesis/dissertation and for a leader who wants to write (and have published) a scholarly paper. Writing a thesis and scholarly paper require defining for oneself a topic of interest then searching for ways to understand and to contribute new knowledge and new understanding. This kind of endeavor requires the learner to shift from pedagogy: copying others; to andragogy: bringing one’s ideas into the content; to heutagogy: questioning fundamental premises and beliefs which lead to exploration which can lead to creating novelty or innovation. Enabling this transition suggests that education programs must develop a process to shift the theory of learning for students/learners as the dissertation approaches. For teachers this means less directing and setting content and more facilitating support and encouraging the learner to assume responsibility for learning.

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