

Presented to the Interdisciplinary Studies Program:



UNIVERSITY OF OREGON  
APPLIED INFORMATION MANAGEMENT

Applied Information Management  
and the Graduate School of the  
University of Oregon  
in partial fulfillment of the  
requirement for the degree of  
Master of Science

# Thinking in Systems: Improving Organizational Effectiveness and Culture

CAPSTONE REPORT

**Tammi Burkhardt**  
**Reporting Analyst**  
**Oregon Health & Science University**  
**Foundation**

University of Oregon  
Applied Information  
Management  
Program

**May 2015**

Academic Extension  
1277 University of Oregon  
Eugene, OR 97403-1277  
(800) 824-2714



Approved by

---

Dr. Kara McFall  
Lecturer, AIM Program



Running Head: THINKING IN SYSTEMS

Thinking in Systems: Improving Organizational Effectiveness and Culture

Tammi Ann Burkhardt

Oregon Health & Science University Foundation



**Abstract**

Systems thinking and its application have been studied in various environments, but it is not always clear how the elements of systems thinking can positively impact operational effectiveness and create a more cohesive organizational culture. Furthermore, it is imperative for organizations to understand the skill set and behaviors that leaders need to acquire and maintain to promote successful change management. This annotated bibliography features literature published between 2006 and 2015 to help individuals in management positions understand, implement, and cultivate the elements of a systems thinking approach to improve operational effectiveness, build a more cohesive organizational culture and promote successful change management.

*Keywords:* systems thinking, operational effectiveness, organizational culture, organizational leadership, change management

**Table of Contents**

Abstract.....	3
Introduction.....	5
Problem Description .....	5
Purpose.....	7
Research Questions.....	8
Audience .....	8
Search Report.....	9
Annotated Bibliography.....	14
Category 1 – Systems Thinking.....	14
Category 2 – Organizational Leadership .....	23
Category 3 – Operational Effectiveness and Organizational Culture.....	27
Category 4 – Organizational Change.....	32
Conclusion .....	36
References.....	43



## Introduction

### Problem Description

All organizations are composed of various physical and social systems (Andreadis, 2009). The basic building blocks of organizational systems are the workforce, technologies (hardware and software), ethical values, behavior, financing and leadership (World Health Organization, 2009). These systems have distinct and diverse elements and, during various organizational processes, those elements can be both independent and interdependent. While some systems are bound by interdependencies, others are a result of these interdependencies (Senge, 2006). Kaspary (2014) defines *interdependence* as "the recognition that a system cannot be a system itself without the presence of the interaction of its parts" (p. 657). How leadership thinks about, understands and responds to the diverse systems within their organizations can be a critical determiner of organizational success (Gilley, McMillan & Gilley, 2009).

When faced with challenges and change, organizational leaders often take a reductionist or fragmented approach to problem solving by focusing on one or two systems in isolation (Swanson et al., 2012). Senge (2006) recommends that by applying the conceptual framework of systems thinking, leaders of organizations can more easily visualize and clarify patterns of system interdependencies, and thus can build capacity for thinking comprehensively and positively impact culture and operational effectiveness. Traditionally, the concept of *systems thinking* refers to the capacity to explore a problem while acknowledging the interdependent relationships and interconnected rather than separate elements and focusing on processes rather than structures (Bui & Baruch, 2010; Laszlo, 2012). Moreover, the focus of systems thinking is on inquiry, analysis and synthesis (Laszlo, 2012). Systems thinking allows for the visualization

of underlying patterns beneath events and details (Senge, 2006). Summarily, "...systems thinking and learning, leadership and change are inseparable" (Caldwell, 2012, p. 41).

An integral function of systems thinking is managing organizational change over time. Laszlo (2012) supports this notion with her concept that "*evolutionary* systems thinking focuses on the pattern of change of a system over time" (p. 97) An organization must encourage its workforce to practice adaptive leadership to meet change and challenges and thrive in a global economy (Heifetz, Grashow & Linsky, 2009). Bui and Baruch (2010) assert, "...people from all parts of an organization, who are competent and genuinely committed to deep changes in themselves and in their organizations, are leaders" (p. 217). Whether a leader is considered top, middle or frontline, the importance of developing a comprehensive understanding of system thinking will lead to workplace empowerment and organizational transformation (Caldwell, 2012). In addition, change must be anchored into organizational culture and norms to be persistent; leadership must systematically demonstrate new behaviors and attitudes to avoid degradation (Kotter, 2007).

Kotrba et al. (2012) describe effective organizations as those that demonstrate high levels of consistency and shared core values. Shared core values, behavioral norms, assumptions, and basic underlying belief systems are aspects of organizational culture that tend to influence operational effectiveness (Bui & Baruch, 2010). Another influencer of operational effectiveness is whether an organization has a culture of learning, one of the cornerstones of systems thinking (Andreadis, 2009). Additionally, effective organizations are identified as those that work to continuously improve operations and understand the importance of coordination and a collaborative planned strategy (American Public Human Service Association, 2012). Gilley, McMillan and Gilley (2009) assert that organizational leaders are ultimately responsible for

making, directing and influencing the actions and decisions that guide the creation of a cohesive organizational culture and thus impact operational effectiveness. Berson, Oreg and Dvir (2007) postulate that leadership is responsible for managing the evolution of organizational culture, nurturing performance and boosting operational effectiveness through coordinated, systematic efforts.

For an optimal and strong organization to build capacity and be effective, leaders need to implement and champion systems thinking and further the understanding of the interrelated actions and relationships within an organization to create a positive organizational culture (Senge, 2006). Leaders must also understand how their values and personalities affect change within their organizations and subsequently, model the behaviors necessary to encourage acceptance and incorporation of systems thinking into daily operations (O'Reilly, Caldwell, Chatman & Doerr, 2014).

### **Purpose**

For an organization to have the capacity to be successful and competitive, executive and senior leaders must affect positive change, promote a cohesive culture and increase operational effectiveness using a systematic approach (Schiuma, Carlucci & Sole, 2012). Hazy and Uhl-Bien (2015) assert that leaders should consistently work towards eliminating confusion and promoting convergence towards patterns of action. Leaders encourage their employees to have a better understanding of and be more responsive to problems by approaching organizational change with a systems thinking approach, especially for organizational systems that are complex (Schiuma, Carlucci & Sole 2012). Furthermore, a systems thinking approach inherently provides leadership with a broader perspective, one that focuses on sustainability and stability (Martz, 2013).

The purpose of this scholarly enquiry is to assess and present selected literature that addresses the specific aspects of *systems thinking* that can be implemented by leadership to stimulate cultural cohesion and increase operational effectiveness. Additionally, the study focuses on literature in order to provide a suite of behaviors and values that can be modeled by leadership to influence the acceptance of systems thinking in relation to organizational change.

### **Research Questions**

This annotated bibliography looks to explore the topic of how leadership can implement aspects of systems thinking to improve operational effectiveness and promote a cohesive organizational culture by asking the following research question:

*What are the key elements of systems thinking for leaders to implement to (a) create a positive and cohesive organizational culture, and (b) increase operational effectiveness?*

Given Senge's (2006) assertion that "well-focused actions can produce significant, enduring improvements" (p.64), this annotated bibliography seeks to answer the following sub question:

*What behaviors can leaders model to impact the acceptance of systems thinking and influence organizational change?*

### **Audience**

This annotated bibliography is written for individuals and groups that may be directly affected by the performance of an organizational system and who can influence its future. The primary stakeholders consist of executive and senior leadership including Presidents, Vice Presidents, Senior Directors, Department Managers, Human Resources Directors and Associates, and Project Managers. Generally, individuals in these positions have both the management authority to implement and effect change and the information regarding culture, organizational

structure and employee assumptions and values that can be predictors of performance and effectiveness (Yilmaz & Ergun, 2008). Furthermore, these senior leaders have a noticeable role in forming and controlling organizational culture and consequently influencing organizational outcomes (Berson, Oreg & Dvir, 2007; O'Reilly, Caldwell, Chatman & Doerr, 2014).

Additionally, researchers, practitioners and facilitators of change who influence strategic decision-making in organizations can benefit from the perspectives offered in this study.

Increasingly, to manage successful companies, these particular individuals and groups are required to cope with organizational complexity, adaptability and diversity, and to employ a systems-thinking approach to problem-solving and change management (Garvin, Edmondson & Gino, 2008).

### **Search Report**

**Search strategy.** Initial searches for suitable reference materials are performed utilizing Google Scholar and the UO Libraries website. The search using the keyword *systems thinking* and using a Boolean search to connect research concepts returns a plethora of books and peer-reviewed journals; however, finding relevant sources with subjects of systems thinking being utilized to promote operational effectiveness and a cohesive organizational culture is more challenging. To narrow the search, several synonyms and other pertinent phrases are used in the advanced search functionalities of the search engines. To help eliminate non-relevant work, critical evaluation is conducted by using the published abstracts and introductions as guides. Additionally, potentially insufficient quality works are removed as prospects for the literature review by checking the credentials of the authors and reviewing the bibliographies.

Several of the most pertinent results are published outside the desired date range for recent publication or revision, but add important historical and contextual information to the

subject and continue to be referenced by other peer-reviewed journals. Currency of information is extremely important as findings can change drastically in short periods of time (Bell & Frantz, 2012). One seminal source published outside the desired date range is *The Fifth Discipline: The Art and Practice of the Learning Organization* written by Peter Senge. Originally published in 1990 and revised in 2006, Senge's writings provide a guidebook for how organizations can become learning organizations through the adaptation of systems thinking (Jackson, 2009). By primarily focusing on more recently published sources on systems thinking, deficiencies in past literature that potentially limit research on individuals or single studies are avoided.

**Search terms.** The main search terms are *systems thinking, system dynamics, operational effectiveness, organizational culture* and *organizational leadership*. After a thorough review of resulting publications is conducted, the search is broadened to include the following terms:

- Organizational cohesion
- Change dynamics
- Cultural norms
- Fifth discipline
- Learning organization
- Adaptive leadership

**Search engines and databases.** The most successful search utilizes the advanced search feature allowing for the searching of the above keyword combinations. Relevant articles are accessed and returned from the following databases:

- Academic Search Premier
- Google Scholar
- JSTOR

- Project Muse
- Web of Science
- ERIC (U.S. Dept. of Education)
- ProQuest
- Social Sciences Premium Collection
- University of Chicago Press Journals
- MEDLINE/PubMed
- MIT Press Journals
- SAGE Journals
- UO Catalog

Search consistency is maintained by limiting searches by keywords, specifying a date range to within the most recent 10 years and limiting results to journal articles and peer-reviewed research. Not all articles found during the review are available in *full text* without payment; therefore those articles are removed from consideration. Outside of the UO Libraries site, Google Scholar, Oregon Health & Science University Archives and the Multnomah County Library are searched to find other relevant and authoritative publications. Primarily, these searches result in books, both hard-copy and electronic, rather than peer-reviewed journal publications. Finally, the reference sections of previously identified material are culled for potential sources of research material.

**Documentation approach.** Full text articles are selected, downloaded and reviewed in Adobe PDF or Microsoft Word format. A full list of potential literature is electronically organized in a secure file folder and backed-up using a removable hard-drive device. A Microsoft Excel spreadsheet is used to separate sources into coding categories and to store

literary source details on author(s), publication date, APA citation and abstract. Key articles are printed to more efficiently highlight and annotate relevant information. Finally, references are separated into three categories: (a) *systems thinking*, (b) *organizational leadership*, and (c) *operational effectiveness and organizational culture*. If a reference covers multiple categories, it is catalogued into the category that best fits its primary theory or research subject.

**Reference evaluation criteria.** As suggested by Bell and Frantz (2014), the references used to validate this annotated bibliography are assessed using the distinct evaluation criteria of relevancy, quality, authority, objectivity and currency to gauge credibility.

**Relevancy.** The first criteria used to evaluate a reference source is whether the published study is relevant to the key topic and can provide supporting evidence to the main research question (Green & Bowser, 2006). If the reference has a clear relationship to the current topic, it is catalogued as relevant to include in the annotated bibliography. If the relationship is not explicit, then the reference is further reviewed for theoretical or historical importance.

**Quality.** Secondly, the resource is evaluated for quality by examining grammatical accuracy and demonstration of interpretive and evaluative writing (Bell & Frantz, 2014; Green & Bowser, 2006). Additionally, if thorough references to other authentic and credible research studies are made, then the resource is deemed appropriate.

**Authority and objectivity.** The third evaluation criteria are the authority and objectivity of the author(s) as suggested by Bell and Frantz (2014) through the University of Oregon libraries site. Author objectivity is demonstrated by the use of non-biased language and writing that leads the audience to draw its own conclusions based on the presented data. Author authority is demonstrated through the author's affiliation with respected institutions of research or credible organizations. Furthermore, the author's credentials, such as advanced degrees,



certifications or job experience show the author is recognized as an authority in the field of research (Bell & Frantz, 2014).

**Currency.** Lastly, sources are reviewed and evaluated for currency. Preference is given to materials published since 2006, the republication year for Senge's seminal book, *The Fifth Discipline: The Art and Practice of the Learning Organization*.

### **Annotated Bibliography**

This annotated bibliography contains 15 references that highlight the key elements of systems thinking that leaders can implement to increase operational effectiveness and promote a more cohesive organizational culture. In addition, several references provide information regarding essential behaviors and values that organizational leaders can demonstrate to influence the acceptance of systems thinking and organizational change. Each annotation includes an APA formatted citation, an abstract from the publication, and a summary of the literary work.

The literature is organized into four categories. The systems thinking category includes four articles and the seminal book by Peter Senge (2006). These publications focus on the definition, history, relevance, and application of systems thinking in an organization. Category two, organizational leadership, includes three articles whose content identifies leadership values and behaviors that can influence the implementation and acceptance of systems thinking. Section three, operational effectiveness and organizational culture, includes four articles that discuss how organizational culture and operational effectiveness can be positively impacted by the implementation of systems thinking. For the purposes of this annotated bibliography the terms organizational effectiveness and operational effectiveness are used interchangeably. Finally, section four, organizational change, includes three articles that discuss how systems thinking, leadership and values impact the success or failure of organizational change.

#### **Category 1 – Systems Thinking**

**Bui, H., & Baruch, Y.** (2010). Creating learning organizations: A systems perspective. *The Learning Organization*, 17(3), 208-227. doi:  
<http://dx.doi.org/10.1108/09696471011034919>

**Abstract.** The purpose of this paper is to offer a theoretical contribution to explicate the various factors and aspects that influence Senge's five disciplines and their outcomes. The paper develops a conceptual framework for the analysis of antecedents and outcomes of Senge's five disciplines, and offers moderators to explain the prospect associations, employing a multi-level analysis to explore issues, from the individual level (personal mastery) through the collective level (team learning, mental model) up to the organizational level (shared vision, systems thinking). The paper points out significant interdependences and interactions among the various constructs associated with Senge's five disciplines of the learning organization. The paper proposes a causal model that links variables in the learning organization that would be instrumental for organizations to achieve competitive advantage. The paper provides significant added value both for academics and executives interested in the analysis of the complexity of Senge's five disciplines.

**Summary.** The article takes an in-depth exploration of Peter Senge's (2006) five disciplines and advances a more quantitative approach to the development of a framework for the learning organization to follow. The five disciplines are: (a) personal mastery, (b) mental models, (c) shared vision, (d) team learning and (e) systems thinking. The goal of this article is to provide a systematic analysis of the interconnection of the five disciplines and delineate the antecedents, moderators and outcomes of each discipline. The authors begin their analysis with personal mastery and end with systems thinking. Bui and Baruch posit that the antecedents to systems thinking are individual competence and leadership (p. 217). The competence and leadership skills mentioned are deeply rooted in the four prior disciplines discussed in the article. Separately, the authors

assert that organizational culture is an antecedent to systems thinking. The supporting research included in the article validates the supposition that while systems thinking can be taught, an organization's culture can highly influence the acceptance of the shared mental model of systems thinking (p. 217). As organizations are a collective of various patterns of correlated actions, the authors assert that the influence of systems thinking impacts organizational learning and change. The framework discussed at the conclusion of the article offers a clarification of the elements necessary to develop a learning organization, primarily the application of Senge's five disciplines (p. 220). The work is distinct from other studies as it is conceptual and speaks to the antecedents of each discipline.

**Dawidowicz, P.** (2012). The person on the street's understanding of systems thinking. *Systems Research and Behavioral Science*, 29, 2-13. Retrieved from

<http://onlinelibrary.wiley.com/doi/10.1002/sres.1094/full> doi: 10.1002/sres.1094

**Abstract.** The understanding of and application of systems knowledge has been studied in various business, government, and education environments. However, as yet, it is unclear what people at large know about systems thinking, where they gained their knowledge, and how important they consider systems thinking to their decision-making processes. This first phase of a 2-year exploratory study considered these unknowns to identify any need for teaching systems thinking and how to best teach it if appropriate. Results indicated that although the 172 respondents agreed making decisions using systems thinking is important to 79.7% of decisions made and approximately half believed they understood the meaning of social systems and application of systems thinking to decision making, most demonstrated no or limited understanding of both.

Finally, most participants' latently gleaned impressions of systems and systems thinking were gained through informal experiences that had occurred since completing their secondary school education.

**Summary.** This article details people's basic understanding of and attitudes towards systems thinking as it applies to decision making. The author performs a three-phase analysis using data from both anonymous questionnaire responses and follow-up interviews from 172 individuals from various backgrounds to ascertain how knowledgeable the respondents are of systems thinking. The survey reveals a definitive lack of clarity regarding definitions of systems and systems thinking. Subsequent interviews provide a deeper perspective of respondents' current application of systems thinking and potential learning opportunities for systems thinking. The information from the study provides relevancy to the idea that deliberate and consistent exposure to and practice of systems thinking can impact future decision making processes. Furthermore, the study supports the importance of leadership modeling and the provision of learning opportunities for systems thinking for knowledge retention.

**Jackson, M. C.** (2009). Fifty years of systems thinking for management. *The Journal of the Operational Research Society*, 60, s24-s32.

**Abstract.** The point of this paper is to provide an account of the last 50 years of systems thinking applied to management that is insightful and useful to those interested in the theory and practice of operational research (OR). In seeking to fulfil this purpose, it employs Boulding's well-known 'hierarchy of complexity' to think through the reasons for the emergence of different strands of applied systems thinking and to detail their strengths. In theoretical terms, operational researchers will find a number of the key

issues that have engaged their field (e.g. hard versus soft approaches) mirrored in debates that have taken place between systems thinkers. They may discover new theoretical avenues to follow to advance their discipline. OR practitioners may also be surprised by the nature and scope of the systems applications described and conclude that systems approaches should be added to their own intervention strategies. At the least, the paper is designed to reinvigorate discussion around the relationship between OR and systems thinking that has occasionally surfaced over the last half century but has never been satisfactorily concluded.

**Summary.** The author of this article provides a historical perspective of the last five decades of systems thinking in relation to management. At the beginning of the article, Jackson defines both operational research (OR) and applied systems thinking (AST). Subsequently, the relevancy of Professor Kenneth Boulding's hierarchy of complexity (1956) is established. Jackson highlights the basics of the theory and summarizes Boulding's concepts by asserting that the characteristics of lower level systems can often be found in higher level systems. Jackson compares and contrasts OR and AST to each other and to other managerial approaches and illustrates the relationship between the two methodologies. The bulk of Jackson's article details three distinct variants of AST, those of functionalist, structuralist and interpretive.

The article describes functionalist systems thinkers as those who utilize a mechanistic model and seek to understand the correlations between parts and relationships in a system and its environment. Alternatively, structuralist system thinkers investigate the structures that are central to system behavior regardless of the system type. The structuralist systems approach is most closely aligned with system dynamics (p. s27). In discussing

system dynamics, Jackson notes that Senge's *Fifth Discipline* (2006) highlights system dynamics as integral to creating a 'learning organization' (p. s27). Jackson notes that functionalists and structuralists are similar in that they both promote the ideal of having a primary and consistent leader for interventions and implementations. The final approach to AST is the interpretive approach. This approach is summarized as one that incorporates human and social systems; an approach that is a synthesis of perspectives which inform future action (p. s29). Again, Jackson connects the interpretive approach to Senge in that fostering consensus and creating commitment enhances organizational outcomes. Summarily, Jackson's article offers both significant historical perspective and evidence that a systematic approach to managerial practice can improve the efficiency and effectiveness of organizations.

**Kaspary, M.** (2014). Complex thought and systems thinking connecting group process and team management: New lenses for social transformation in the workplace. *Systems Research and Behavioral Science*, 31(5), 655-665. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/sres.2313/full>

**Abstract.** This paper addresses group process and team management strategies. Recognizing the trajectory in both groups and teams, as living systems in our postmodern society, it challenges why teams are assessed as having better performance or development. This paper discusses a new way to understand group process and teams using three bodies of knowledge: (1) complexity theory including dialogic, organizational recursion, and holographic principles and the knowledge through comprehension and explanation, (2) systems thinking properties applied to living systems, including interaction, interdependence, autonomy and dependency, organization and self-

production, and (3) rhizomic structures as a mode of knowledge that is non-hierarchical and possibly provides a useful means of understanding society as interconnected alliances in movement.

**Summary.** This paper provides research on how systems thinking properties impact group processes and team management. Kaspary begins her research by asserting that groups, teams, workplaces and environments are living systems with interconnected components and these systems often contribute to each other, especially where improvement and knowledge is concerned. In her study, Kaspary provides five properties of systems thinking, those of interaction, interdependency, organization, self-production autonomy and dependency (p. 657). Although autonomy and dependence are opposite concepts, Kaspary posits that while teams and groups are dependent on other systems to operate, groups and teams also require autonomy to decide to operate independently. A product of interaction is organizational cohesion, which can create wholeness. Interdependency is noted as being recursive in that feedback assists in the production of desirable results and often changes individual perspective and future contribution. Autonomy and dependence influence decision making in that teams and groups are often dependent to or independent of other systems. The fourth property is organization, which is a dynamic process of order and disorder requiring creativity and innovation from groups and teams to maintain operations. The final property is self-production, when teams and groups create significant results and experiences. The author concludes by providing several graphical representations of group and team features utilizing system thinking properties. In conclusion, Kaspary's research supports the premise that teams



and groups can benefit in efficiency, effectiveness and cohesion by applying a systems thinking perspective to interaction.

**Senge, P. M.** (2006). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday/Currency.

**Abstract.** Senge describes how companies can rid themselves of the learning "disabilities" that threaten their productivity and success by adopting the strategies of a learning organization – ones in which new and expansive patterns of thinking are nurtured, collective aspiration is set free, and people are continually learning how to create results they truly desire.

**Summary.** In his book, Senge describes his narrative of the learning organization. Senge outlines five action-oriented disciplines essential to the development of a learning organization—personal mastery, mental models, shared vision, team learning and systems thinking. Senge asserts that the integrator of all of the disciplines is that of systems thinking. Throughout the exploration of each discipline, the author places the emphasis on systems thinking as one that can provide concepts and tools to wholly visualize complexity in an organization, thus informing organizational change. Additionally, the book offers tangible methods and tools aimed at developing learning capabilities within organizations. Furthermore, the seminal text provides a framework that facilitates critical thinking for decision making.

**Swanson, R.C., Cattaneo, A., Bradley, E., Chunharas, S., Atun, R., Abbas, K.M.,**

**Katsaliaki, K., Mustafee, N., Meier, B.M. & Best, A.** (2012). *Rethinking health systems strengthening: Key systems thinking tools and strategies for transformational*

change. *Health Policy and Planning*, 27(4), 54-61. Retrieved from [http://heapol.oxfordjournals.org/content/27/suppl\\_4/iv54.short#cited-by](http://heapol.oxfordjournals.org/content/27/suppl_4/iv54.short#cited-by). doi: 10.1093/heapol/czs090

**Abstract.** While reaching consensus on future plans to address current global health challenges is far from easy, there is broad agreement that reductionist approaches that suggest a limited set of targeted interventions to improve health around the world are inadequate. We argue that a comprehensive systems perspective should guide health practice, education, research and policy. We propose key ‘systems thinking’ tools and strategies that have the potential for transformational change in health systems. Three overarching themes span these tools and strategies: collaboration across disciplines, sectors and organizations; ongoing, iterative learning; and transformational leadership. The proposed tools and strategies in this paper can be applied, in varying degrees, to every organization within health systems, from families and communities to national ministries of health. While our categorization is necessarily incomplete, this initial effort will provide a valuable contribution to the health systems strengthening debate, as the need for a more systemic, rigorous perspective in health has never been greater.

**Summary.** In this article, the authors present justification for the implementation of systems thinking tools and strategies to enact transformational change in health care systems. Although the article is primarily focused on the health care industry, the authors posit that the information provided can be synthesized for any service industry. The three overarching themes of systems thinking presented in this article are those of iterative learning, transformational leadership and collaboration across disciplines. The authors assert that industries with adaptive, complex systems present ample opportunities for

creating and nurturing a systems thinking practice. Specific tools of systems thinking highlighted in the article are knowledge synthesis, concept mapping and engaging and enabling stakeholder collaboration. The authors assert that the implementation of systems thinking is a gradual transition and requires dedicated front-line modeling and innovative adapters.

## **Category 2 – Organizational Leadership**

**Caldwell, R.** (2012). Leadership and learning: A critical reexamination of Senge's learning organization. *Systematic Practice & Action Research* 25, 39-55.

**Abstract.** From its inception the concept of the learning organization has been identified with a particular type of organization or new forms of organizational learning. But it is often forgotten that Senge's 'system thinking' formulation of the learning organization, inseparable from an attempt to reformulate a new way of thinking about change agency and leadership in organizations. Here it is argued that Senge's learning organization can be re-conceptualized as a partial fusion of 'systems thinking' and learning theories that leads to a concept of organizational learning as a form of 'distributed leadership'.

**Summary.** This article examines Peter Senge's concept of the learning organization, especially the elements of systems thinking and the link between how leadership and the managerial methods employed by leaders impact organizational learning. At the beginning of his article, Caldwell synthesizes Senge's five disciplines: personal mastery, mental models, shared vision, team learning and systems thinking. He agrees with Senge's assertion that "systems thinking and learning, leadership and change are inseparable" (p. 41). Although Caldwell finds significant limitations within Senge's declarations, he supports the theory of applying a systems thinking framework to

organizational change and learning. He bolsters his support with the premise that in addition to a systems thinking approach, organizations must examine the role of leadership within change management. Caldwell's research confirms Senge's link between learning and leadership and recommends that additional research be completed to determine how organizational change occurs, how the role of change agents impact change and what practices and processes define organizational change and learning.

**Laszlo, K. C.** (2012). From systems thinking to systems being: The embodiment of evolutionary leadership. *Journal of Organizational Transformation & Social Change*, 9(2), 95-108.

Retrieved from [http://www.maneyonline.com/doi/abs/10.1386/jots.9.2.95\\_1](http://www.maneyonline.com/doi/abs/10.1386/jots.9.2.95_1)

**Abstract.** This article grew out of a personal reflection on the meaning of evolutionary leadership based on the learning derived from my experiences as an educator, consultant, coach, social entrepreneur and mother. Systems thinking has been a means for enabling critical and creative perspectives from which ideas for improving a difficult situation or innovating a new possibility emerge. However, no matter how powerful this way of thinking is, there is more to the task of catalyzing evolutionary transformation towards life-affirming, future creating and opportunity increasing realities. Thus evolutionary leadership is a call for participation in the most important task of our time: to innovate a future of peace and abundance in partnership with all the living systems of our planet Earth. If the insights from systems thinking and practice will be of help in the transition to a viable future for all, they should not be restricted to books and the halls of a few universities, but they need to become part of the social fabric that informs our cultures: the narrative that gives purpose and meaning to who we are, why we are here, and where we are going as a global civilization.

**Summary.** This article explores the premise of evolutionary leaders being those who can transform systems thinking into systems being. Laszlo affirms the definition of systems thinking as an approach which focuses on processes versus structures, interconnections over parts and cooperation versus opposition. She advocates *evolutionary systems thinking* as "focusing on the pattern of change of systems over time" (p. 97). The author proposes the idea of systems thinking as a gateway to envision interrelationships, thus expanding organizational culture consciousness and awareness. Furthermore, the article supports the importance of leaders leveraging the practice of conversation to facilitate change and expand organizational adaptability and capacity. Two dimensions of evolutionary leadership cited by the author include ongoing learning and personal development and the seeking of stakeholder contributions to transformation. Moreover, the author identifies three sets of competencies integral to evolutionary leadership: mind-set, skill-set and heart-set. Primarily, the author asserts the "mind-set of the evolutionary leader is grounded in systems" (p. 105). An evolutionary leader is further described as being adaptive and empowering, having clarity of values and one whom creates conditions supportive of effective collaboration. In summary, Laszlo describes systems thinking as an essential tool to assist in understanding working relationships and how organizational learning takes place. Conclusively, the author fosters the idea that it is only through systems thinking and evolutionary leadership that organizations and individuals have the ability to transform and effect positive change.

**Shaked, H., & Schechter, C.** (2013). Seeing wholes: The concept of systems thinking and its implementation in school leadership. *International Review of Education*, 59(6), 771-791.

**Abstract.** Systems thinking (ST) is an approach advocating thinking about any given issue as a whole, emphasizing the interrelationships between its components rather than the components themselves. This article aims to link ST and school leadership, claiming that ST may enable school principals to develop highly performing schools that can cope successfully with current challenges, which are more complex than ever before in today's era of accountability and high expectations. The article presents the concept of ST – its definition, components, history and applications. Thereafter, its connection to education and its contribution to school management are described.

**Summary.** This article by Shaked and Schechter explores the desirable leadership competencies necessary for school leaders to develop highly performing educational organizations: (a) empowerment, (b) effective communication, (c) fostering collaborative processes, (d) recognizing accomplishments, (e) encouraging situational learning, (f) instituting organizational practices, and (g) modeling learning as a shift in perception. Furthermore, the article defines, provides historical context for, and introduces applications of systems thinking, including the mention of Senge's five disciplines, for school leaders. Moreover, the authors put forth several distinct components and characteristics of systems thinking such as understanding any system as a whole rather than a collection of parts and the need to recognize the underlying structures and influences of subsystems at play. The authors illustrate how systems thinking can serve as an effective management approach for problem-solving, group learning and decision making. Additionally, the authors conduct research and identify four leadership qualities to improve performance: (a) leading wholes, (b) considering interconnections, (c) adopting a multidimensional view, and (d) evaluating significance. Leading wholes is

defined as collaborative codependence, meaning continuously developing individuals and teams. In conclusion, the article reiterates the supposition that the acquisition of systems thinking knowledge and skills is vital for leaders to develop organizations that are adept at learning.

### **Category 3 – Operational Effectiveness and Organizational Culture**

**Andreadis, N.** (2009). Learning and organizational effectiveness: A systems perspective.

*Performance Improvement*, 48(1), 5-11. Retrieved from

<http://onlinelibrary.wiley.com/doi/10.1002/pfi.20043/pdf>

**Abstract.** The challenge for leaders today is to create and develop the capability of their organization. Leaders must perceive and manage their organization as a dynamic, open system where learning is the core competence underlying innovation, growth, and sustainability. Creating a culture of learning is the first work of leadership. This article presents a practical framework in which to consider organizational effectiveness, emphasizing the critical role of systems thinking and learning theory in organizational development.

**Summary.** This article focuses on the elements of leadership that can impact culture and learning in an organization, especially the element of modeling a systems thinking approach for organizational development. The author defines an organization as effective when systems, people and strategies are aligned and competencies are well developed. Andreadis references two approaches to measure organizational performance: the balanced scorecard method from Kaplan and Norton (1993) and the 7-S method by Waterman, Peters, and Phillips (1980). Andreadis posits that an effective organization is abstractly similar to living, organic systems because of its ability to develop and adapt its

systems, behaviors and processes to achieve its performance goals. The author describes a visionary leader as one who makes a commitment to constant learning, competence and adaptability; one who can model behavior and values that result in an organization outperforming its competition (p. 6).

The author covers four intersecting subsystems, those of governance, management, work and people. In his article, Andreadis presents several visualizations of the inputs, outputs, consequences and feedback interactions of these subsystems. The visualizations assist in validating the infinite number of potential interactions among the subsystems that necessitate leadership providing clear strategies, performance measurements, consistent policies and practices, unity of purpose and essential communication skills. Finally, the article stresses productivity and performance outcomes are highly dependent on leadership establishing organizational learning. Andreadis' article supports the idea that organizational leaders must encourage systematic thinking and learning behaviors to influence improved individual and team performance and cultural cohesion.

**Kotrba, L.M., Gillespie, M.A., Schmidt, A.M., Smerek, R.E., Ritchie, S.A. & Denison, D.R.**

(2012). Do consistent corporate cultures have better business performance? Exploring the interaction effects. *Human Relations*, 65(2), 241-262. Retrieved from

<http://hum.sagepub.com/content/65/2/241.full.pdf+html> doi: 10.1177/0018726711426352

**Abstract.** Past research has shown a close connection between organizational culture and effectiveness, but nearly all of this research has examined the direct effects of culture on performance outcomes. In contrast, this article examines the idea that the effects of cultural consistency on organizational performance may differ depending on the levels of other culture traits. Data from 88,879 individuals in 137 public companies using the



Denison Organizational Culture Survey were paired with three objective measures of organizational performance and used to examine the interaction effects of consistency with mission, adaptability, and involvement. Consistency shows a significant positive interaction with all three traits in predicting market-to-book ratios and sales growth. Firms that are both consistent and adaptable, for example, are high performers. In contrast, the results show a significant negative interaction when predicting return on assets. The implications of these results are discussed with respect to future culture and effectiveness research.

**Summary.** This article examines how consistency within an organizational culture impacts organizational performance. The article's assumptions are informed using the responses from the Denison Organizational Culture Survey (DOCS) completed from 1995-2005. In addition, the authors cite numerous research studies that link culture to effectiveness, especially the cultural elements of values, involvement, beliefs and assumptions. Cultural consistency refers to the "level of cohesion, integration, or agreement around values and norms" (p. 243). The authors assert that effective organizations are those that leverage teamwork, continuously develop operational capacity, promote systems thinking approaches to problem solving and empower their employees. Kotrba et al. (2012) describe three trait and culture relationships that can facilitate improved organizational effectiveness: (a) consistency and mission, (b) consistency and adaptability, and (c) consistency and involvement. Cultural consistency and involvement are most closely aligned to a systems thinking approach as a culture that shows high levels of involvement demonstrates a system for incorporating input from a variety of diverse sources in decisions and actions. In conclusion, the authors stress the

systems thinking approach where understanding the interactions among cultural dimensions assists in defining and measuring performance effectiveness of employees. Furthermore, the authors describe the necessity for organizations to have mission clarity, the capacity to adapt to change and involvement traits in order to achieve cultural consistency.

**Schiama, G., Carlucci, D. & Sole, F. (2012).** Applying a systems thinking framework to assess knowledge assets dynamics for business performance improvement. *Expert Systems with Applications*, 39(9), 8044-8050. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0957417412001571>.  
[doi:10.1016/j.eswa.2012.01.139](https://doi.org/10.1016/j.eswa.2012.01.139)

**Abstract.** Knowledge assets represent strategic resources and sources of organizational value creation. Their effective development and deployment is at the basis of organizational value creation capacity. However there is still a lack of applied approaches and tools explaining how knowledge assets dynamics take place in organizational value creation mechanisms. In particular, there is a managerial need to define decision support frameworks that can enable managers to understand how knowledge assets interact each other and with organizational performance in order to support the achievement of company's strategic objectives. A better understanding of why and how knowledge assets management initiatives can be turned into value creation mechanisms with positive impacts on business performance is fundamental to avoid misallocation of resources and to support management decisions. This paper proposes a systems thinking-based framework, the Knowledge Assets Dynamics Value Map (KAVDM), to explicate the working mechanisms by means knowledge assets can evolve on the basis of knowledge

management initiatives and affect business performance improvements. The KAVDM offers a holistic view of the mechanisms at the basis of how knowledge assets are translated into organizational value. It supports the explanation and monitoring of how knowledge assets are interpedently and dependently linked, and how the management of one knowledge asset activates flow dynamics, that influence both other knowledge assets and business performance. Using the KAVDM managers can reflect upon the knowledge components grounding a company's value creation and assess their mental models and views of the reality. Finally, an application of the KAVDM within a construction company is presented and its main managerial benefits addressed.

**Summary.** This article primarily discusses how a systems thinking framework can be used to more accurately assess knowledge asset dynamics for business performance improvement. Knowledge assets are described as process data, historical information, cultural components, organizational comprehension and collective capacity. The authors assert that managers need a holistic view of how knowledge assets interact with each other in order to meet and improve organizational performance objectives. The authors maintain that managers must be adaptable to the dynamic and evolving nature of knowledge assets. A systems thinking approach allows for the mapping of causal relationships between organizational elements, thus emphasizing the whole rather than the parts (p. 8046). Schiuma, Carlucci and Sole propose the Knowledge Assets Value Dynamics Map (KAVDM) model to enable managers to have a holistic view of how knowledge assets are translated into organizational value (p. 8047). The KAVDM model is a “closed loop diagram linking knowledge assets, business performance improvements and knowledge management initiatives” (p. 8046). In conclusion, the authors contend that

when managers understand the role of knowledge assets they have the potential to avoid misallocation of resources and more effectively promote collaboration in achieving strategic objectives.

#### **Category 4 – Organizational Change**

**Burnes, B. & Jackson, P.** (2011, June). Success and failure in organizational change: An exploration of the role of values. *Journal of Change Management*, 11(2), 133-162.

Retrieved from

<http://web.ebscohost.com.libproxy.uoregon.edu/ehost/pdfviewer/pdfviewer?sid=83940d02-ca71-423d-af7b-5bab52771fe4%40sessionmgr114&vid=1&hid=106>. Doi:

10.1080/14697017.2010.524655

**Abstract.** One of the most remarkable aspects of organizational change efforts is their low success rate. There is substantial evidence that some 70% of all change initiatives fail. This article explores the argument that a potentially significant reason for this is a lack of alignment between the value system of the change intervention and of those members of an organization undergoing the change. In order to test this assertion, the article begins by reviewing the change literature with regard to the impact of values on success and failure. It then examines Graves' Emergent Cyclical Levels of Existence Theory and uses this as the basis of a method for identifying and aligning value systems. The article then presents the results from case studies of two change initiatives in different organizations. These support both the method and the assertion that value system alignment may be an important factor in the success of organizational change initiatives.

**Summary.** This article explores how organizational and employee values impact the successful outcome of organizational change. The authors emphasize Graves' Emergent Cyclical Levels of Existence Theory (ECLET) as the main method to explore human values. Dr. Clare W. Graves was a psychology professor who developed the above theory as an approach to understanding human behavior (Graves, 1974). In his research, Graves (1974) classified and created a hierarchy of eight human value systems. In addition, he theorized that "employees respond best when their value system is congruent with the value system of those who manage them" (p. 139). Burnes and Jackson apply Graves' approach in two case studies and present the results in their article.

Through their research and discovery, the authors support the premise that successful organizational change necessitates the alignment of the primary values of the organization and the method by which change is approached. Furthermore, the article promotes the idea that effective organizations are ones where values and goals are shared among leadership and staff. Burnes and Jackson specifically highlight historical works which draw attention to shared vision leading to positive organizational change, works similar to Peter Senge's (2005) book on the five disciplines of the learning organization.

**Gilley, A., McMillan, H.S. & Gilley, J.W.** (2009, August). Organizational change and characteristics of leadership effectiveness. *Journal of Leadership & Organizational Studies*, 16(1), 38-47. doi: 10.1177/1548051809334191

**Abstract.** The existing literature suggests that numerous variables affect a leader's effectiveness. In this study, the authors examine behaviors associated with leadership effectiveness in driving change. Results indicate that specific leader behaviors—the

ability to motivate, communicate, and build teams—are predictors of successful implementation of organizational change.

**Summary.** This article investigates the behaviors exhibited by leaders impacting organizational effectiveness and change. A survey and several focus group discussions provided the relevant data for the authors to analyze and synthesize into discussion points. Furthermore, the authors cite numerous research studies asserting that "organizations supporting and implementing transformational change remain competitive" (p. 38). Moreover, several articles cited by the authors put forth the premise that successful change management results in modified employee behavior. The article identifies three types of change: (a) transitional, (b) transformational, and (c) developmental (p.39). The frequency of change experienced by organizations can range from episodic to continuous. According to the authors, certain skills and abilities have been associated with successful change management, "including the abilities to coach, communicate, motivate, build teams, and involve others" (p. 43). In addition, Gilley, McMillan and Gilley emphasize the supposition that it is necessary for leadership to have a comprehensive, systems thinking view of individual, group, and organizational processes to drive positive change.

The article also highlights the theory that leaders who lack the understanding of change implementation techniques, especially those related to identifying and modifying systems or structures, fail to execute change initiatives successfully. In conclusion, the article reveals that leaders who demonstrate deliberate and disciplined values and behaviors, grounded in systems thinking, enable effective change.

**Kogetsidis, H.** (2012). Critical systems thinking: A creative approach to organizational change. *Journal of Transnational Management*, 17,189-204.

**Abstract.** This article argues that change initiatives often fail to meet anticipated objectives as a result of change approaches not being holistic or creative enough. The study takes the position that managers must adopt a systemic approach, based on the creative use of different systems methodologies and methods and explains how critical systems thinking can provide a creative approach to organizational change. Critical systems thinking, through its commitments to critical awareness, improvement, and methodological pluralism, provides a way of being both holistic and creative at the same time, and could therefore provide a suitable alternative to change approaches. Viewing the problem situation from a holistic perspective, adopting systems concepts and perspectives, and being creative in the choice and use of methodologies and methods will provide a new approach to organizational change and make a significant contribution to improving organizational performance.

**Summary.** This article by Kogetsidis explores the position that when faced with organizational change or improving organizational performance, managers should adopt a systematic approach. In addition, the author asserts that managers need to consider the interaction between parts, instead of solely focusing on specific elements of the problem. The article describes the types of organizational change, the frequency of change, the drivers of change and the scope of change organizations experience. Kogetsidis asserts that for change to be effective the elements of systems must be identified and the change processes must be managed systemically. The author notes that the interplay of actions and interactions among systems are highly relevant in creating change throughout an

organization. Furthermore, Kogetsidis specifies that systematic thinking provides the ability to bridge diverse constructs and offers awareness of the criticality of holism and maximizing the ability to promote effective and coherent change management. In summary, the author asserts that systems thinking promotes the challenging of assumptions and strives to bring about individual development and organizational improvement.

### **Conclusion**

This annotated bibliography presents and synthesizes 15 selected references on systems thinking and its potential positive effects on operational effectiveness, organizational culture, and organizational change. The references are organized into four categories: (a) systems thinking disciplines, (b) systems thinking and organizational leadership, (c) building operational effectiveness and organizational culture through systems thinking, and (d) facilitating organizational change through systems thinking. The included references support the idea that by establishing a comprehensive systems thinking approach to problem-solving and change management, organizations can improve operational effectiveness and encourage more cohesive organizational cultures. Furthermore, conclusions drawn from the literature support the premise that organization leaders play significant roles in implementing successful change management and can affect positive interactions by modeling certain behaviors such as collaboration, engagement, active listening, and systems thinking (Gilley, McMillan & Gilley, 2009; Laszlo, 2012; Shaked & Schechter, 2013). Moreover, organizations that have a better understanding of the interrelationships of existing physical and social systems and internal business processes, through a systems thinking approach, are more adaptive and flexible to change (Kogetsidis, 2012).



## **Systems Thinking Disciplines**

*Systems thinking*, referred to as the fifth discipline by Peter Senge (2006), is the fusion of four correlated disciplines that, when blended together, form a theory and practice organizations can apply to improve operational effectiveness, build a more cohesive culture, and manage change. The four associated disciplines are (a) personal mastery, (b) mental models, (c) shared vision, and (d) team learning (Senge, 2006).

Personal mastery is the discipline of continued learning and establishment of skill proficiency and is an essential cornerstone of a learning organization (Senge, 2006). A person with high personal mastery is self-motivated, expresses a desire to achieve, demonstrates initiative, and is willing to commit to personal and professional development (Bui & Baruch, 2010; Gilley, McMillan & Gilley, 2009; Kogetsidis, 2012). Organizations that promote personal mastery have employees who perform better and have more balanced work lives (Bui & Baruch, 2010). Personal mastery has roots in many cultures and has strong connections to organizational learning (Senge, 2006).

Mental models are defined as internal thought processes that guide, influence, and impact individual and team perceptions and belief systems (Bui & Baruch, 2010; Senge, 2006). Mental models have the power to influence behavior and are often used to explain cause and effect. Furthermore, mental models can stimulate improved operational effectiveness through the sharing of best practices and the acquisition of new skills (Bui & Baruch, 2010). Accordingly, leaders must leverage and align existing mental models and encourage an environment through which mental models can be expanded as organizations are continually tasked with improving operational effectiveness and building cohesive organizational cultures to stay competitive (Andreadis, 2009). Moreover, by emphasizing the importance of exposing the existence of

inaccurate assumptions and dated thought processes, leaders can facilitate and guide collective learning and systematically shift employees' perceptions and responsiveness to organizational change in more positive manners (Shaked & Schechter, 2013).

An organization's vision often defines pathways to success or describes the goals and strategies the organization has set (Schwartz et al., 2006). Research indicates that operational effectiveness is correlated with the manner in which leaders share common beliefs and encourage shared vision (Bui & Baruch, 2010; Schwartz et al., 2006; Senge, 2006). Mastering the discipline of shared vision means that people have to interact with their own visions and be committed to listening and accepting the visions of others. Schwartz et al. (2006) contend that "shared vision is the key to organizational stability and growth" and "developing, clarifying, and communicating shared visions can have powerful results" (p. 347; p. 358).

Team learning, often referred to as organizational learning, is the process of working collectively to achieve a common goal (Senge, 2006). Habitually, team learning encourages collaboration during the processes of discussion and dialogue. Successful team learning behaviors lead to shared mental models of problem-solving, ultimately leading to improved team effectiveness (Van den Bossche, Gijssels, Segers, Woltjer & Kirschner, 2011). Kaspary (2014) asserts the idea that understanding team and process interactions and diagnosing issues that arise from these interactions are the first properties of a systems thinking approach. These interactions demonstrate the connections among organizational elements and can differentiate systems from a cluster of parts (Kaspary, 2014).

### **Systems Thinking and Organizational Leadership**

Three overarching themes of systems thinking in the context of organizational leadership have been identified by the literature in the annotated bibliography: (a) promoting collaboration

across disciplines, (b) encouraging ongoing, iterative learning, and (c) demonstrating transformational leadership skills and behaviors (Swanson et al., 2012). The literature supports the idea that a systems thinking approach often requires a shift of mind from seeing parts to seeing wholes and thinking in terms of interconnections rather than separation (Laszlo, 2012; Senge, 2006). When leaders adopt a culture that focuses on correlations, supports the efforts to reach beyond individual areas of expertise, and continually identifies knowledge gaps, collaboration is fostered (Swanson et al., 2012). Furthermore, by encouraging collaborative engagement, values alignment, shared vision, team problem-solving and the expansion of norm boundaries, leaders can foster a more cohesive organizational culture that is more adaptive to complex challenges and change (Laszlo, 2012).

Several leadership skills have been identified as those that facilitate operational effectiveness and encourage acceptance of change; skills such as the abilities to motivate others, communicate effectively, and build collaborative teams (Gilley, McMillan & Gilley, 2009). Moreover, traits such as demonstrating a consistent supervisory ability, being intelligent, having the drive towards achievement, and exhibiting decisiveness and self-assurance lead to building cohesive organizational cultures (Shaked & Schechter, 2013). Deliberate and disciplined action, grounded in a solid base of systems thinking, can foster leadership success (Senge, 2006).

### **Building Operational Effectiveness and Cohesive Organizational Culture through Systems Thinking**

Kaspary (2014) promotes the idea that the integration of systems thinking and complex thought processes allows teams to focus on both the implicit and explicit tasks of problem-solving, often revealing what the team needs to accomplish and how to work together towards a successful resolution. Frequently, by implementing a systems thinking approach, an organization

can establish a positive cycle of recursion and feedback, which is continuously producing improved responses and results while reducing and preventing the proliferation of reductionist thinking (Kaspary, 2014; Swanson et al. (2012). Swanson et al. (2012) note that systems thinking attempts to identify and maximize positive interrelationships and minimize negative effects, thereby activating a shared vision and elevating operational efficiency.

The incorporation of systems thinking into organizational culture brings about a transformative process that when cultivated and nurtured, results in improved operational effectiveness. Dawidowicz (2012) asserts that to be successful, organizations need to promote an educational process that engages the learning facets of memory, imitation, and motivation and encourages collaboration. Organizations that promote the importance of learning as an essential core competency reap the rewards of efficiency, growth, and cultural advancement (Andreadis, 2009). Furthermore, the process of continually learning often uncovers new ideas for persistent operational improvement and organizational culture growth and prosperity (Bui & Baruch, 2010). Schiuma, Carlucci and Sole (2012) provide research that supports the theory that organizational value, performance and achievement are bolstered when managers understand how knowledge assets interact with each other and encourage systematic decision making and strategic planning. By implementing a systems thinking approach, leaders can build maps to visualize feedback relationships, identify existing knowledge assets and highlight value creation components, thereby building a framework from which to begin improving operational effectiveness (Schiuma, Carlucci & Sole, 2012).

Kotrba et al. (2012) examine a series of studies linking systems thinking to operational effectiveness and organizational culture values, beliefs, and assumptions. Researchers agree that cultural consistency and cohesion have a direct impact on operational effectiveness (Bui &

Baruch, 2010; Kotrba et al., 2012). Cultural cohesion and cultural strength are built as cultural elements are integrated and shared and agreement is sustained around values and norms (Andreadis, 2009). Systems thinking is a pragmatic approach that aligns perspectives and promotes cultural cohesion by enhancing communication, facilitating individual and organizational growth, and demystifying complex concepts (Shaked & Schechter, 2013).

### **Facilitating Organizational Change Through Systems Thinking and Value Alignment**

In their research, Gilley, McMillan and Gilley (2009) affirm the supposition that the capacity for organizations to adapt to change is often a critical determiner of organizational success. Additionally, successful change management necessitates the modification of employee behavior (Kogetsidis, 2012). Uncertainty is inherent in organizational change; therefore, leaders need to emphasize a robust approach to managing change, such as the use of systems thinking to reduce ambiguity and confusion while promoting effective action and encouraging goal and value congruence (Burnes & Jackson, 2011; Gilley, McMillan & Gilley, 2012). To be effective in change implementation, leaders must understand the complexity of change and demonstrate the ability to think holistically and creatively (Kogetsidis, 2012). One of the disciplines inherent in systems thinking, that of personal mastery, assists leaders in holistic and creative thinking by encouraging them to creatively integrate reason and intuition and use all resources at their disposal (Senge, 2006). Kogetsidis (2012) contends that by embracing systems thinking disciplines and being creative in choice, organizations can make significant strides in improving organizational performance and successfully managing change.

### **Closing Remarks**

Now more than ever, organizations are required to have a comprehensive view of existing physical and social systems, engage in frequent change, demonstrate knowledge scalability,

create environments conducive to and supportive of teams, and fully engage employees in cultivating successful outcomes (Gilley, McMillan & Gilley, 2009; Kogetsidis, 2012; Senge, 2006). To be successful in the current competitive landscape, organizations need to implement a systems thinking approach and employ leaders who encourage learning and innovation and inspire collaboration and organizational cultural cohesion (Laszlo, 2012). The five disciplines, noted by Peter Senge (2006), of personal mastery, shared vision, mental models, team learning and finally systems thinking are all essential to creating and maintaining a learning organization that can accomplish these requirements. As the research has shown, employing a systems thinking approach leads organizations to visualize the interconnectedness of organizational system elements, develop skill capacity and knowledge assets, and see wholes rather than parts; thereby increasing problem-solving capacity, ensuring scalability, improving operational performance and the ability to facilitate change and cultivating cohesive organizational cultures (Senge, 2006).

## References

- American Public Human Service Association. (2012, September). *A guidebook for building organizational effectiveness capacity: A training system example*. Washington, D.C. Retrieved from <http://www.aphsa.org/content/dam/aphsa/pdfs/OE/2012-09-Guidebook-Building-OE-Capacity.pdf>
- Andreadis, N. (2009). Learning and organizational effectiveness: A systems perspective. *Performance Improvement*, 48(1), 5-11. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/pfi.20043/pdf>
- Bell, C., & Frantz, P. (2014). Critical evaluation of information sources | University of Oregon Libraries. Retrieved April 21, 2015, from <http://library.uoregon.edu/guides/findarticles/credibility.html>
- Berson, Y., Oreg S., & Dvir, T. (2007, October). CEO values, organizational culture and firm outcomes. *Journal of Organizational Behavior*, 29, 615-633. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/job.499/epdf>
- Boulding, K.E. (1956). General systems theory – The skeleton of science. *Management Science*, 2, 197-208. Retrieved from <http://pubsonline.informs.org/doi/abs/10.1287/mnsc.2.3.197>
- Bui, H., & Baruch, Y. (2010). Creating learning organizations: A systems perspective. *The Learning Organization*, 17(3), 208-227. doi:<http://dx.doi.org/10.1108/09696471011034919>
- Burnes, B. & Jackson, P. (2011, June). Success and failure in organizational change: An exploration of the role of values. *Journal of Change Management*, 11(2), 133-162. Retrieved from <http://web.ebscohost.com.libproxy.uoregon.edu/ehost/pdfviewer/pdfviewer?sid=83940d0>

[2-ca71-423d-af7b-5bab52771fe4%40sessionmgr114&vid=1&hid=106](https://doi.org/10.1080/14697017.2010.524655). Doi:

10.1080/14697017.2010.524655

Caldwell, R. (2012). Leadership and learning: A critical reexamination of Senge's learning organization. *Systematic Practice & Action Research*, 25, 39-55.

Cheng, J. L. (1983). Interdependence and coordination in organizations: A role-systems analysis. *The Academy of Management Journal*, 26(1), 156-162. Retrieved from

<http://www.jstor.org/discover/10.2307/256142?uid=3739856&uid=2129&uid=2134&uid=2&uid=70&uid=4&uid=3739256&sid=21105978000001>

Coldwell, D. (2012). Learning organizations without borders? A cross-cultural study of university HR practitioners' perceptions of the salience of Senge's five disciplines in effective work outcomes. *International Journal of Cross Cultural Management*, 12(1),

101-114. Retrieved from

<http://ccm.sagepub.com/content/early/2011/11/08/1470595811413107>

Dawidowicz, P. (2012). The person on the street's understanding of systems thinking. *Systems Research and Behavioral Science*, 29, 2-13. Retrieved from

<http://onlinelibrary.wiley.com/doi/10.1002/sres.1094/full> doi:10.1002/sres.1094

Garvin, D. A., Edmondson, A.C. & Gino, F. (2008, March). Is yours a learning organization? *Harvard Business Review*, 86(3), 109–116. Retrieved from <https://hbr.org/2008/03/is-yours-a-learning-organization>

Gilley, A., McMillan, H.S., & Gilley, J.W. (2009, August). Organizational change and characteristics of leadership effectiveness. *Journal of Leadership & Organizational Studies*, 16(1), 38-47. doi: 10.1177/1548051809334191



Graves, C.W. (1974). Human nature prepares for a momentous leap. *The Futurist*, 4, 72-87.

Retrieved from

[http://www.clarewgraves.com/articles\\_content/1974\\_Futurist/1974\\_Futurist.html](http://www.clarewgraves.com/articles_content/1974_Futurist/1974_Futurist.html)

Green, R., & Bowser, M. (2006). Observations from the field: Sharing a literature review rubric.

*Journal of Library Administration*, 45(1/2), 185-202. doi: 10.1300/J111v45n01\_10

Hazy, J.K. & Uhl-Bien, M. (2015). Towards operationalizing complexity leadership: How generative, administrative and community-building leadership practices enact organizational outcomes. *Leadership*, 11(1), 79-104. Retrieved from

<http://lea.sagepub.com/content/11/1/79.abstract>. doi: 10.1177/1742715013511483

Heifetz, R., Grashow, A. & Linsky, M. (2009). Leadership in a (Permanent) crisis. *Harvard*

*Business Review*, 87(7-8), 62-69. Retrieved from <https://hbr.org/2009/07/leadership-in-a-permanent-crisis>

Jackson, M. C. (2009). Fifty years of systems thinking for management. *The Journal of the Operational Research Society*, 60, s24-s32.

Kaplan, R.S. & Norton D.P. (1993). Putting the balanced scorecard to work. *Harvard Business Journal*, 71, 134-142.

Kaspary, M. (2014). Complex thought and systems thinking connecting group process and team management: New lenses for social transformation in the workplace. *Systems Research and Behavioral Science*, 31(5), 655-665. Retrieved from

<http://onlinelibrary.wiley.com/doi/10.1002/sres.2313/full>

Kogetsidis, H. (2012). Critical systems thinking: A creative approach to organizational change.

*Journal of Transnational Management*, 17,189-204. doi: 10.1080/1547578.2012.706704

- Kotrba, L.M., Gillespie, M.A., Schmidt, A.M., Smerek, R.E., Ritchie, S.A. & Denison, D.R. (2012). Do consistent corporate cultures have better business performance? Exploring the interaction effects. *Human Relations*, 65(2), 241-262. Retrieved from <http://hum.sagepub.com/content/65/2/241.full.pdf+html>. doi: 10.1177/0018726711426352
- Kotter, J.P. (2007). Leading change: Why transformation efforts fail. *Harvard Business Review*. Retrieved from <https://hbr.org/2007/01/leading-change-why-transformation-efforts-fail>
- Laszlo, K. C. (2012). From systems thinking to systems being: The embodiment of evolutionary leadership." *Journal of Organisational Transformation & Social Change*, 9(2), 95-108. doi: 10.1386/jots.9.2.95\_1
- Martz, W. (2013). Evaluating organizational performance: Rational, natural, and open system models. *American Journal of Evaluation*, 34(3), 385-401. Retrieved from <http://aje.sagepub.com/content/34/3/385.abstract>. doi: 10.1177/1098214013479151
- O'Reilly, C.A., Caldwell, D.F., Chatman, J.A. & Doerr, B. (2014). The promise and problems of organizational culture: CEO personality, culture, and firm performance. *Group & Organizational Management*, 39(6), 595-625. doi: 10.1177/1059601114550713
- Schiama, G. (2009). The managerial foundations of knowledge asset dynamics. *Knowledge Management Research & Practice*, 7, 290-299. Retrieved from <http://www.palgrave-journals.com/kmrp/journal/v7/n4/full/kmrp200921a.html>. doi:10.1057/kmrp.2009.21
- Schiama, G., Carlucci, D. & Sole, F. (2012). Applying a systems thinking framework to assess knowledge assets dynamics for business performance improvement. *Expert Systems with Applications*, 39(9), 8044-8050. Retrieved from

<http://www.sciencedirect.com/science/article/pii/S0957417412001571>.

[doi:10.1016/j.eswa.2012.01.139](https://doi.org/10.1016/j.eswa.2012.01.139)

Schwartz, G.M., Kerr, S., Mowday, R.T., Starbuck, W.H., Tung, R.L. & Von Glinow, M.A.

(2006). Astute foresight or wishful thinking? Learning from visions. *Journal of*

*Management Inquiry*, 15(4), p. 347-61. Retrieved from

<http://jmi.sagepub.com/content/15/4/347.full.pdf+html>. doi: 10.1177/1056492606294638

Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday/Currency.

Shaked, H. & Schechter, C. (2013). Seeing wholes: The concept of systems thinking and its

implementation in school leadership. *International Review of Education*, 59(6), 771-791.

doi: 10.1007/s11159-013-9387-8

Swanson, R.C., Cattaneo, A., Bradley, E., Chunharas, S., Atun, R., Abbas, K.M., Katsaliaki, K.,

Mustafee, N., Meier, B.M. & Best, A. (2012). Rethinking health systems strengthening:

Key systems thinking tools and strategies for transformational change. *Health Policy and*

*Planning*, 27(4), 54-61. Retrieved from

[http://heapol.oxfordjournals.org/content/27/suppl\\_4/iv54.short#cited-by](http://heapol.oxfordjournals.org/content/27/suppl_4/iv54.short#cited-by). doi:

10.1093/heapol/czs090

Van den Bossche, P., Gijssels, W., Segers, M., Woltjer, G. & Kirschner, P. (2011). Team

learning: building shared mental models. *Instructional Science*, 39(3), 283-301. Retrieved

from <http://link.springer.com/article/10.1007/s11251-010-9128-3#page-1> doi:

10.1007/s11251-010-9128-3

Waterman, R.H., Peters, T.J. & Phillips, J.R. (1980) Structure is not organization. *Business*

*Horizons*, 23, 14-26.

World Health Organization. (2009). *Systems Thinking for Health Systems Strengthening*.

Albany, NY, USA: World Health Organization. Retrieved from <http://www.ebrary.com>

Yilmaz, C. & Ergun, E. (2008). Organizational culture and firm effectiveness: An examination of relative effects of cultural traits and the balanced culture hypothesis in an emerging economy. *Journal of World Business*, 43, 290-306.