Integration of Holonomic Thinking in Educational Leadership Development Courses

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Abstract

Educational leaders are prime observers of their school performance and progress. As leaders and active participants in the steps towards school improvement, they must take into consideration diverse stakeholders' opinions, ideas and beliefs, and technical aspects such as data analysis while engaging in the decision-making process. This practice can be enhanced by considering the circumstances and all stakeholders involved from a holonomic viewpoint rather than an egocentric viewpoint. This article explores the holonomic conceptual platform and its strategies as a conduit to broaden emergent school leaders' perspectives.

Keywords: decision-making, holonomics, leadership, school improvement, systems thinking.

Esse est percipi
(To be is to be perceived)
George Berkeley

1   Introduction

Schools nationwide face numerous and complex challenges, from less-than-ideal student scores in standardized assessments to tense school climate, corroding the already debilitating condition of K-12 public education (Ravitch, 2016; National Center for Education Statistics, 2016). Schools identified as persistently low-achieving may choose to receive state funding, which typically is attached to assurances to speed up student achievement. With the authorization of the Every Student Success Act (U.S. Department of Education, 2015), local school leadership teams must generate clear strategies and solutions to tackle these demands.

When teams are unable to develop a solution because of lack of consensus or ideas, they may emulate and implement other schools' initiatives, which may not be suitable for their site, augmenting their chances of failure and negatively influencing student progress. The importance of enhancing teams' problem-solving skills is considered a predictor of many other positive relations, such as student achievement (Chrispeels, Castillo & Brown, 2000). Typically, teams are composed of teachers representing various content areas and specializations, guidance counselors, administrators, parents and school board representatives. In some instances, state law mandates meaningful engagement with parents, pupils, school personnel, local bargaining units, including those representing subgroups, such as English Learners and special education students (CDE, 2016).

To develop schools and districts' improvement, strategic and local accountability plans, educational leaders have been increasingly holding school leadership teams and stakeholders' meetings where the voices of the school community could be heard. Educational leaders are responsible for managing these all-inclusive teams, guiding them in the decision-making process and synthesizing the information into comprehensive plans and action items that can be implemented with fidelity.

Facilitating teams and stakeholders' meetings is a daunting task for leaders, as individuals' opinions vary and may be guided by personal motives and unique cultural values. Additionally, team members' emotional states may play a part in the decision-making process (LeBlanc, McConnell, and Monteiro, 2015). Data can assist teams to keep the focus of the meetings on factual information. Use of data has been shown to result in appropriate decision-making (Gullo, 2013). Although the use of data is valuable and widely popular, it is just one useful vehicle to navigate the winding road towards student achievement and school improvement. Hargreaves, Morton, Braun, and Gurn (2015) argue that:

Data can help in addressing these issues, but in the end, some of our most challenging educational and social problems will not mainly be solved by more or better data, just as they will not be solved by more technology or by any other silver bullet. More and better data can help us make more efficient educational decisions and judgments, but they will not, of themselves, help us make wiser or more humane ones. (p. 5)

Hargreaves et al. (2015) suggest the need to recognize the multidimensional aspects and tools that must be taken into consideration when working to achieve school improvement. This includes the team's capacity for problem-solving and decision-making, each team members'

unique characteristics and input, and the capacity to employ tools such as data in a "wiser or more humane" way. The skill of the educational leaders to identify and work with all of these elements, at times simultaneously, requires conscious effort and practice. The leaders must be able to see the intrinsic as well as the extrinsic dimensions of the situation. The need for multidimensional approaches to educational leadership calls for innovative approaches to educational leadership. Educational leaders need new frameworks that will enable them to appreciate the relationship between the organizational parts and the whole, which together constitute the complex process of working with others on school improvement efforts.

By enabling organizational leaders to see organizational issues as multifaceted and complex, Holonomics offers one such innovative approach to educational leadership. It requires practice and a set of clear strategies and techniques to perceive more than one facet of a situation affecting an organization and to act on that perception. The failures to recognize patterns, to see potential interferences and to accommodate all stakeholders in a situation, often lead to poor decisions made in a hasty manner. Heifetz and Linsky (2002) use a brilliant analogy to understand this concept:

Let's say you are dancing in a big ballroom. . . . Most of your attention focuses on your dance partner, and you reserve whatever is left to make sure you do not collide with dancers close by. . . . When someone asks you later about the dance, you exclaim, "The band played great, and the place surged with dancers." But, if you had gone up to the balcony and looked down on the dance floor, you might have seen a very different picture. You would have noticed all sorts of patterns. . . you might have noticed that when slow music played, only some people danced; when the tempo increased, others stepped onto the floor; and some people never seemed to dance at all. . . . the dancers all clustered at one end of the floor, as far away from the band as possible. . . . You might have reported that participation was sporadic, the band played too loud, and you only danced to fast music. . . . The only way you can gain both a clearer view of reality and some perspective on the bigger picture is by distancing yourself from the fray. . . .If you want to affect what is happening, you must return to the dance floor. (p. 53)

In the case of school leadership, poor choices that fail to take into consideration the larger picture may inadvertently provoke chains of events that ultimately have detrimental outcomes on students' performance and development. On a larger scale, this entrenched modus operandi has been pervasive, as reflected in years of futile attempts to nationwide school reform, such as the legislative efforts of Goals 2000*, A Nation at Risk* and the No Child Left Behind Act.

Holonomics is a pioneering way of enabling leaders to appraise systems models, mental models, as well as organizational and economic models. The word "holonomics" is currently used in physics, classical mechanics, mathematics, and robotics. In the 1990s, Karl Pribram (1991) used the term to describe his "holonomic brain theory." Pribram's theory originates from the mapping of particular brain processes, mathematical insights and optical imaging. In the leadership context, the term "holonomics" fits well to define the intrinsic and extrinsic dimensions of complex systems. Holonomics equip us to see the state of affairs from a perspective that allows us to comprehend the entire system – living, working and interacting. It is a groundbreaking approach to implementing profound transformational change in organizations, in which solutions are ones which engage people across the whole organization, developing strong organizational cultures, trust, and effective communication among members. This approach describes a new way of thinking that teaches educational leaders how to innovate and solve problems creatively by using four ways of knowing – thinking, feeling, sensing and intuition (Robinson and Moraes Robinson, 2017).

These four ways are often forgotten or repressed in the world of leadership and administration because the thinking patterns that prevail in educational leadership are Newtonian and Taylorian in nature, which produce persistent linear constructs leading to the same undesirable results. School leadership and management have been acquainted with these principles for decades. A simple illustration of this is the manner in which schools have been and continue to be built and managed, imitating the blueprints and the characteristics of hospitals, prisons, and industrial buildings from the 19th century. Capra and Luigi (2014) put it simply by asserting:

The principles of classical management theory have become so deeply ingrained in the way managers think about organizations that for most of them the design of formal structures, linked by clear lines of communications, coordination, and control, has become almost second nature. This largely unconscious embrace of the mechanistic approach to management has now become one of the main obstacles to organizational change. (p. 59)

Holonomics offers ways of countering the resilient human tendency to categorize, divide and treat predicaments as isolated events without realizing the strong connections that transpire among each one of them. In the case of school leadership, all efforts should be directed towards reaching the ultimate goal of increasing student progress and achievement. However, each initiative is selected in isolation without questioning their alignment towards this critical objective. David Bohm (2002) precisely identifies this human predilection towards fragmentation by stating:

Indeed, to some extent, it has always been both necessary and proper for man, in his thinking, to divide things up, and to separate them, so as to reduce his problems to manageable proportions; for evidently, if in our practical technical work we tried to deal with the whole of reality all at once, we would be swamped. (p. 2)

Disrupting this way of deep-rooted thinking is the first step towards better results. Although this step may sound ingenuous, virtually a fundamental notion, it has tremendous potential to change the present mechanistic and fragmented ways of thinking that are prevalent in education and support teams in their attempts to transform teaching and learning.
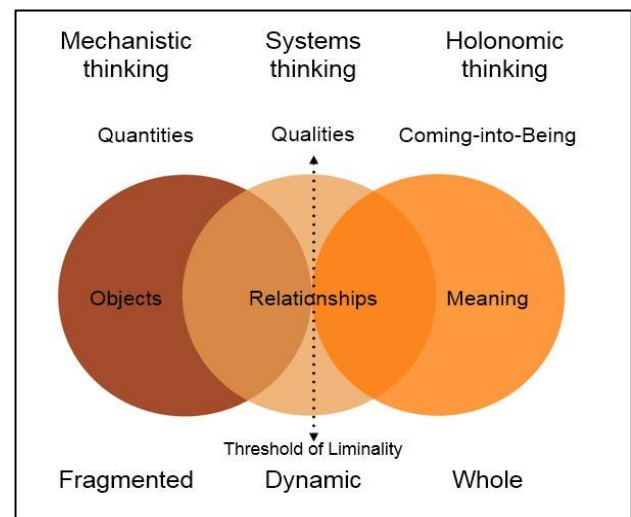

Fig. 1. The liminality point between mechanistic and holonomic thinking. Reproduced from Robinson and Robinson (2014). *Holonomics: Business Where People and Planet Matter.*

The challenge to adopting a holonomic approach arises at the point where individuals are able to see the value of holonomic models yet persist in thinking in mechanistic terms. This point is called the threshold of liminality. Figure 1 represents the point of liminality that leaders must be attentive to, and surpass, in order to navigate the transition from mechanistic to holonomic thinking. This point of liminality can be overcome by first considering the theoretical foundations of holonomics, and by seeing how holonomic thinking can be implemented in educational leadership classrooms.

2   Literature Review
Holonomics Theoretical Foundations

The philosophical foundations of Holonomics are based on new hermeneutic and phenomenological conceptualizations of the whole in systems thinking, particularly those of Martin Heidegger (1962), Hans-Georg Gadamer (1975) and Johann Wolfgang von Goethe (1988). In all of their thinking there is a shift away from a focus on thinking about objects which are out there, independent of us in a physical reality, and move the center of our attention away from what is seen, i.e. objects, and into the dynamic act of seeing. This way of seeing is neither purely dependent on words and symbols, nor entirely dependent on analytical thinking, which breaks problems down into parts, modeling them, limiting them, and then putting them back together into a counterfeit whole. Holonomics, therefore, understands the whole as coming to presence in the parts, as opposed to dominating the parts in a top-down system or being subservient to the parts. The whole can only be experienced in one's intuition as an encounter through the parts. This dynamic conception of wholeness has been with us since Plato's time, and yet often it has remained disguised and not recognized since the form in which it appears has been in many different contexts.

Furthermore, the theoretical foundations of Holonomics originate from two philosophies. The first is the educational philosophy of the Indian educator Sathya Sai Baba who created the program Education in Human Values, which has at its great aim the development of character:

Education nowadays develops skills and intellect, but what good is all the knowledge in the world if you do not have character? Character is the unity between thought, word, and deed. Some say that knowledge is power, but I say that character is power. (Sathya Sai Baba, 1989)

At the heart of the program are five human values, which are taught to all students. These are *love, peace, righteousness, truth, and non-violence*. According to Sathya Sai Baba,

Today, everyone wishes to fulfill his selfish interests at the cost of others. No one acts with a pure heart and good intention to help others. A human being is expected to have the qualities of Sathya (truth), Dharma (righteousness), Santhi (peace), Prema (love) and Ahimsa (non-violence). Devoid of these qualities, he is not a human being at all. (Sri Sathya Sai Education, 2008, p. 2).

This approach to education enables and equips people not only to perform technical tasks but also to develop wisdom and discernment, to give the individual the ability to make better choices in their path in life, from the point of view of everyone and not just themselves. It remind us that a sound and robust foundation of leadership must embrace human values and social justice principles.

The second philosophy is the phenomenological and hermeneutical conception of wholeness articulated by Henri Bortoft (1938 - 2012). This dynamic conception of wholeness can be found as far back as the writings of Plato. Bortoft introduces the phenomenological approach to understanding experience in the following manner:

But just as, according to Descartes, mathematical physics takes us 'out of' the body and separates us from nature, so the lived body can bring us into the presencing of nature. Such an encounter would be an impossibility within the framework of modern science, and yet it is only by awakening to this that we will really understand what is at stake in our relationship to the natural environment, and at the same time begin to wake up from our enthrallment by the artificial world of technology.

Phenomenology teaches us how to shift our attention within experience, drawing attention back from what is experienced – i.e. where the focus of attention is on the what – into the experiencing of what is experienced. When we do this, we begin to understand how it is possible for objects to appear to us within our lived experience. (Bortoft, 2012, p. 49)

Bortoft's great contribution was to demonstrate how the dynamic conception of wholeness is found in Goethe's phenomenological approach to science, in Martin Heidegger's radical philosophical conception of Being, and in Hans-Georg Gadamer's philosophical hermeneutics.

In his writings, Plato posited a *chorismos* - a two-world system. Gadamer did not interpret the *chorismos* as an ontological separation, i.e. the literal existence of two independent worlds or universes. He took the view that Plato had to posit this separation to help us understand the methodological differences between that which we can experience through our senses and ideal realities" such as abstract thinking and the basic elements of mathematics. (Robinson, 2016) Gadamer concluded that the major concern for Plato was in understanding the nature of the One and the many (or to put it in organizational terms, the whole and the parts). Thus what we discover in Gadamer's writings on Plato is a wide-ranging doctrine for how humans can live together, based on the recognition that we live our lives in a web of meaning. (Wachterhauser, 1999, p. 5)

Hermeneutics allows us a way to explore this human web of meaning. As Robinson and Moraes Robinson (2017) explain:

Hermeneutics is less a written structured methodology, and more a way of approaching the study of a text or a work of art as a conversation. Within the process of having this conversation, one's own self-understanding is restructured. Gadamer always emphasized that, especially in relation to written works, we should always attempt to take the other in their intention and not in their expression. This is by no means easy of course since the majority of the time we do not have access to people's intentions, just their expressions. We can gain an appreciation of the approach that hermeneutics takes to meaning by looking at one particular example, that of legal judgments. This helps us to start to think about what we mean by the One, the whole, the general, identify and how these concepts relate dynamically to concepts such as the many, the parts, the specific, and difference.

One of the greatest issues relating to moral behavior is the tension which exists between knowing what is right in general and knowing what is morally right in any single particular situation. When making decisions about what is morally right, we depend on knowledge of what is right in order to make a particular decision, but at the time of making the decision, we often find that there are no single universal rules which can be applied independently of that particular situation. For this reason, we need the wisdom to guide us between the *general* and the *particular*. This dynamic can be found operating in legal judgments (Wachterhauser, 1999). We

cannot codify the law; clearly, it is written because there will always be a need for discretionary decision-making. We need judges to make legal judgments and juries to decide matters of fact. This opens up the possibility of laws being applied either too leniently or too strictly, resulting in those who are guilty being acquitted of crimes on technicalities while others who are innocent or who have acted out of a genuine moral and ethical obligation are given sentences that the public considers to be far too severe.

Gadamer was concerned with the limitations of the scientific method in relation to claims about the truth, especially in relation to the logical empiricism of the Vienna Circle, which took hold in the early part of the twentieth century. Prior to Gadamer, Goethe published his *Theory of Colors* in 1810, a treatise which also concerned itself with the limitations of the scientific method and the way in which the focus was on a codification of light in the form of abstract lines and geometry, and not on the actual phenomena of color itself. At this moment in the history of science, no other scientist or philosopher was more fully knowledgeable in the study and understanding of color than Goethe, a polymath poet, artist, and scientist. (Sepper, 2002) Goethe, like Gadamer, felt that we could access a form of truth through developing an artistic and aesthetic form of consciousness, grounded in phenomena.

Holonomic thinking goes one step further by expanding the ability to "see" a complex system whole with an amplifying looking glass. The journey of the mind from mechanistic thinking to systems thinking, to holonomic thinking, demands a shift in the way in which we perceive and learn. Mechanistic thinking is absorbed by processes, fragmentality, objects and quantity. Systems thinking is concerned with relationships, dynamics, and quality. Holonomic thinking calls for a reorganization of consciousness. True understanding can only be attained by paying attention to one's intuition, making meaning and seeing the "authentic whole"- processes, dynamics, *and* meaning. Only then can people be transformed by the system having a richer understanding of the world and their place in it.

The term holonomic derives from the Greek words ὅλος, holos "whole" "entire" and νόμος nomos, meaning "law." Arthur Koestler originally coined the word *holon*. In his book *The Ghost in the Machine* (1967), Koestler shares a short story about two watchmakers manufacturing an identical watch using one thousand parts. Despite the fact the watch was in high demand, one of the watchmakers was unsuccessful and had to close his factory. The main difference was in the way they manufactured their watches. One watchmaker produced one bit at the time. Every time he was interrupted or distracted, he had to start all over again and was unable to complete an entire watch. However, the prosperous watchmaker understood the interdependency that exists between the parts and the whole within the system. He created subassemblies of 10 parts that could be added to larger assemblies before the units could be brought together to construct the final watch. Through this narrative, Koestler acknowledges there is a hierarchical order in all aspects of an organization. He recognizes that "The reason why any relatively stable society-whether of animals or humans must be hierarchically structured, can again be illustrated by the watchmakers' parable: without stable sub-assemblies-social groupings and subgroupings- the whole simply could not hold together." (p. 50) Furthermore, Koestler clarifies that a part, division, holon, contains *self-assertive tendencies* due to their distinctive *wholeness*. This feature of holons is indispensable to run a dynamic organization. Conversely, the holon also exhibits an opposite side of *integrative tendencies*. This part-whole dichotomy, when unbalanced, can preclude us from perceiving both atomistic and holistic approaches.

More than two decades ago, Banathy (1991) warned that the lack of growth in education was due to three factors: "1) the piecemeal,

incremental approach; 2) the failure to connect and integrate solution ideas; 3) and staying within the boundaries of the existing system" (p. 11). Attempting to mend each classroom and individual departments in isolation is unproductive. Failure to see the school as a living ecosystem of mutually dependent parts leads to inefficiency and reinforces the vicious cycle of mediocrity. It should not be perceived as a machine where batched processes take precedent and children are merely supported based on tests results. As previously mentioned, focus on the parts must not dominate or refrain from appreciating the whole. Focusing, on the whole is essential, which comes to presence in the parts and it is not a super-part.

School leaders can influence the path schools are going to take and the steps needed to reach each marker towards improvement and transformation. An educational leader should be mindful of how both forces blend internally and externally in the school community. If there is no conceptualization of the whole system, if there is only a view of results and of departments having goals that conflict with other departments, the organization as a whole loses energy, is not sustainable in the long term and therefore achieves inferior results. Holonomics stimulates leaders to understand: a) their *systems* as organic and dynamic interrelated units, b) to appreciate the lived *experience* of each person (students, parents, employees, the school community), c) how shared *meaning* emerges in the organization over time allowing it to become agile, efficient and transparent, and d) how human *values* are the basis for authenticity, agility, and change within an organization (Robinson and Moraes Robinson, 2014).

To expand on the above holonomic premises, educational leaders managing change must be able to deal with observations, use their intuition, and perceive the hidden connections that exist in between people which are often much stronger than the organizational chart and structure. This leads to organizations being truly sustainable, with the values, mission, strategy and the very essence of the organization being understood and then expressed by each and every member. If we can comprehend, understand and heal these broken and unauthentic relationships, then we can start to rediscover trust and "what it means to genuinely share and cocreate, whatever we are attempting to envision, innovate and bring into this world." (Robinson, 2017)

The journey from seeing from an ego-nomic to a holonomic perspective involves humility. When a leader goes into the act of seeing itself, they develop a sensitivity to the lived experience of others, an extremely powerful ability to have which leads to comprehension, empathy, and understanding of the motives, actions and underlying causes of the outwardly perceived actions and expression of other people. Leaders must develop a more dynamic and systemic appreciation of all the relationships in both their schools and organizational ecosystems, and how these interconnected relationships affect their culture, mission and ultimately their bottom line.

There must be maximum coherence between what an organization says, what it means, and what it does. (Robinson and Moraes Robinson, 2017) This coherence has to run throughout the whole organization, both internally and externally, and across its classrooms, departments, school ecosystem, and the communities with which it interacts.

3 Methodology
Putting Holonomics into Educational Practice

In her book *Changes of Mind: A Holonomic Theory of the Evolution of Consciousness,* Wade (1996) offers a fitting description of the transformational progression that occurs in students' minds when presenting them

with challenging exercises and situations. In short, their conventional view of reality is disrupted.

Change results from a combination of internal and external factors in the explicated order. The individual encounters a problem he is highly motivated to solve, but for which no resolution exists within the (perceived) reality permitted by his stage of consciousness. Kuhn provides a better description for transitions in consciousness than most developmental psychologists (1970), probably because noetic structuring is fundamentally paradigmatic structuring: the world does not change; the way in which the world is understood does. When confronted by severe and even prolonged anomalies, an individual may begin to lose faith in his worldview and consider alternatives, but he is not easily able to give up or change his point of view. When a conflict of logical inconsistency becomes sufficiently acute, it in effect violates his conception of reality. (p. 262)
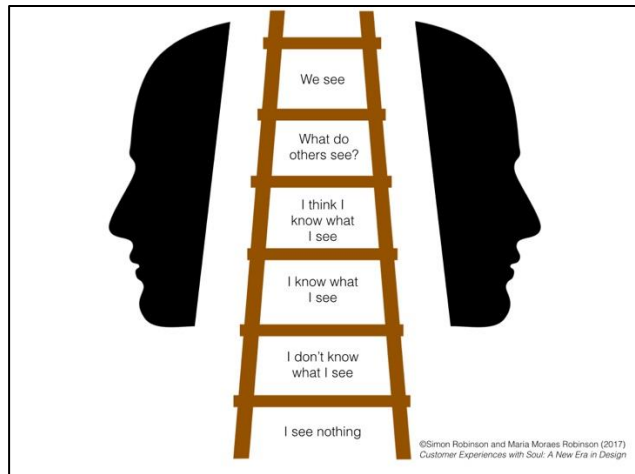
 "The Ladder of Seeing" is a holonomic exercise which enables students the process of entering into the dynamics of seeing. It helps to clarify to leaders the potential limitations in their ways of knowing the world. In this exercise, Robinson and Moraes Robinson (2017) propose six levels of insightful discovery as illustrated in Figure 3.

The way we "see" the world on a daily basis is entrenched with our singular tendencies that do not let us perceive the essence of the situation. Normally, we think that seeing is that through light, our eyes and nervous system, we can perceive images of this external world and thus invariably know things about it. Our mental models have an authoritative control on our "seeing" and may preclude us from appreciating the whole picture. Only by making a concerted effort to move our attention beyond the objects, or *what is seen*, to the actual *act of seeing* that we discover that our mental models misrepresent reality. The ladder of seeing allows leaders to recognize that their reality is not the right and only way. Regrettably, we seldom take the time or contemplate the fact that other people may have different experiences of realities, that they may understand complex situations and problems in dramatically different ways. A creative organization which uses holonomic thinking has leaders who are able to ascend the ladder to make effective decisions and find solutions which emerge not from one person's mental models and paradigms dominating the other, but through capturing the rich diversity of individuals' distinctive ways of thinking and seeing. This exercise is achieved by dialogue and reflection.

In the book *Holonomics*, Robinson and Moraes Robinson (2014) write extensively about Goethe's theory of color and explain how it can be explored using glass prisms in leadership classes. Students are encouraged to explore natural color phenomena created by the prism and compare their observations with the abstract theories of light of Newton. This exercise has been influential for those taking part. The reason is that our intellectual minds are not on their own able to grasp the phenomenological nature of the natural world. Goethe felt that a phenomenological approach to science could achieve a deeper way of understanding nature by plunging into our senses and fully trusting our senses to explore natural phenomena, rather than viewing the sensory experience as secondary to any quantifiable way of reducing nature to measures. (Goethe, 1988).

Robinson and Moraes Robinson have taken insights from *Holonomics* as the basis for the creation of exercises which allow business leaders to actually experience just how much our mental models shape and filter our view of reality. The exercises take them into the experiencing of the dynamics of seeing. The goal is to lead executives to the astonishing insight that they do not have an exclusive claim to the truth about reality, leading them to understand better just how much genuine dialogue is required for

them to fully make sense of complex situations. Leaders cannot longer see themselves as the one person in an organization who has all the answers. Leaders need to be able to both initiate and nurture participation in dialogue and also participate in it. Before leaders can use dialogue to help people and themselves change their mental models, they have to move from an ego-centric world view to an eco-centric world view. To have a true dialogue, they have to have a detachment from their own perspective and in order to be able to listen to others. This can only come about when the values of a leader are truly authentic, based on human values such as love, peace, righteousness, truth, and non-violence.

Fig.3. Six levels of the "Ladder of Seeing" exercise. Reproduced from Robinson and Robinson (2017) *Customer Experience with Soul: A New Era in Design.*

Holonomic thinking training activities in educational leadership development courses are inquiry-based, interactive, collaborative and reflective practices with real life applications. Prospective or current administrators make a myriad of decisions influencing the lives of thousands of students. The skills needed to resolve challenging situations can only be acquired by placing educational leadership students under the stress of authentic circumstances. For decades, experiential learning, games, and interactive simulations have been used in the classroom and shown to be effective instructional strategies in education (Stumpf, 1995). As we transition from the information age to a conceptual era, instructors must challenge students of educational leadership to expand their perspectives, their ways of seeing and employ creative solving processes when confronted with ambiguous and complex problems. Now, more than ever, this heuristic approach is invaluable in the preparation of future educational leaders in particular.

Holonomics, as an approach towards a whole way of seeing, helps students of leadership to see and think dynamically, expand their organizational mindfulness and their role in the entire system. As stated by Robinson and Robinson (2014), "It is a mode of consciousness which, while acknowledging the importance of the analytical-logical-symbolic aspect of our minds, fully embraces intuition, feeling and sensing so as to enable us to encounter and comprehend systems in their entirety." This process supports the development of powerful and innovative organizational solutions.

Holonomics takes students on transformational learning journeys. This path will, in turn, enable their organizations that may be stuck in traditional, linear mindsets to transform themselves, becoming dynamic, authentic, and agile. For example, an organization may wish to receive help

developing a sustainable and long-term strategy. To communicate that strategy to people working at all levels of the organization, organizational leaders might develop experiential and gaming learning experiences that recognize and honor the importance of each collaborator and stakeholder. This is a Holonomic way of comprehending the organization, a way of seeing the organization, not as a command-and-control top-down structure, but which sees the crux of the mission, vision, and values as coming to presence in each and every member (Robinson and Moraes Robinson, 2014).

An example of an experiential activity includes the instructor using a Hoberman sphere as a prop to imagine the interrelations present in all organizations. Holonomics refer to this approach as the dynamics of seeing. This activity enables students to contemplate different perspectives from the center, edge and outer locations of the sphere. An example of a simulation is a game board activity. Students are confronted with thought-provoking scenarios or wicked problems and must use "21 Leadership Lenses" (i.e., the lens of accountability, the lens of simplicity, the lens of leadership, the lens of complexity) to decide the best course of action and envision an ideal outcome. Participants receive 21 cards (each card includes a set of prompt questions), a case scenario, and a board with a timer where chips must be placed as they complete each card.

For decades business executive programs, such as the MIT Sloan School of Management, have incorporated games in their curriculum as a way to introduce students to solving complex system dynamics and organizational change. The Beer Game is a prime example of a successful board game used to train business leaders (Sterman, 1989). The "21 Leadership Lenses" game is grounded on the book *The Art of Virtual Games Design: The Book of Lenses* (Schell, 2015) which considers all aspects of the game environment and the players' decision-making process. Schell is an American video game designer who has had an illustrious career, working at Walt Disney Imagineering for seven years in the capacity of the programmer, manager, designer and Creative Director on several projects.

Following his time at Disney, Schell was invited to join Carnegie Mellon University's new Entertainment Technology Center, where he developed a range of design methodologies. The thinking that goes into the creation of games; be they computer games, live action games or theme park attractions - applies to the creation of any experience which anyone (a client, a customer, an employee, a stakeholder, or an audience member) may have. Schell is now focusing on the development of what he calls transformational games, games which are illuminating as well as entertaining, having the power to transform education and the classroom. He uses the concept of lenses to offer us one hundred different perspectives on games design, which together emphasize the value of representing the various stakeholders' perspectives rather than consensus-building when solving problems. The foundation of his philosophy and methodology is the first lens, the 'Lens of Essential Experience,' which calls on the game's designer to stop thinking about the game, and to think about the player, by asking these three questions:

- What experience do I want the players to have?

- What is essential to that experience?

- How can my game capture that essence?

An additional simulation may include a physical activity where students participate in an organizational "systems thinking" exercise called "Med-

itation on Starlings." (Robinson, 2017) Students reflect about the similarities that exist between nature's self-organizational patterns and their own organization's behavior.
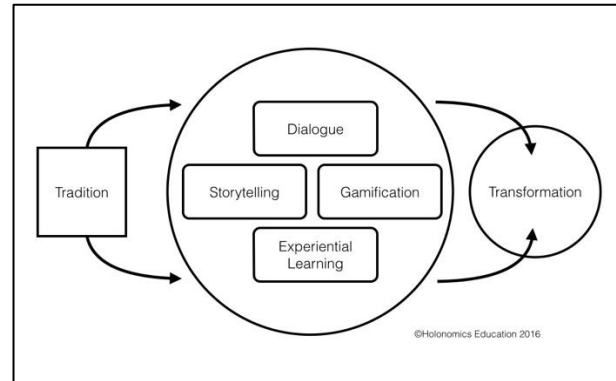

Fig.2. Holonomics Education: The Four Learning Factors

As Figure 2 illustrates, the holonomics instructional approach employs authentic inquiry, profound dialogue, storytelling, experiential learning, and simulations. These methods shift students' traditional thinking model propelling them to transform their way of thinking.

The following two quotes come from business students who attended a Holonomics module as part of their MBA course at Sustentare Business School in Joinville, Santa Catarina, Brazil. Their comments demonstrate the way in which it is possible to help people reorganize their conceptions of complex systems and how this way of thinking can be applied in business, service oriented organizations and the educational leadership context:

Before attending the module, my mental model and way of thinking only saw the negative features of complexity, seeing only limited possibilities. Complexity has come to mean knowledge, a set of provocations that result in change. It is the possibility of expanding the consciousness to the whole, to make sense, see answers and different ways of thinking. It is the possibility of recognizing the characteristics that relate to thought, sensations, feelings and intuition. For me now complexity means an increase of possibilities, a wealth of options that lead to the results. It is the ability to undress our mental models and experiment, creating new possibilities.

Before the course, I understood the concept of complexity as being linked to uncertainties and contingencies. After the module, I now define complexity as an opportunity. It is the opportunity to be an adaptive, creative, dynamic and more agile in our organization. (Robinson, 2014)

These stories show that by developing experiential games with clear narratives, it is possible to create stories which help people to make sense of what the organization is trying to achieve, regardless of their background, education or experience.

An example of how holonomics can help organizational leaders make sense of what their organization is trying to achieve comes from Hospital Sírio Libanês, one of the most prominent hospitals in Latin America, based in São Paulo. Hospital Sírio Libanês is also a teaching hospital, offering post-graduate and residential courses. Student medics come to the hospital from across Brazil to study, and distance-learning courses are also available. Their growth strategy is based on education, training people capable of opening other units in São Paulo and elsewhere in Brazil. They are a philanthropical not-for-profit organization, and they had spent some years developing their business strategy and their strategic map, which had

people, sustainability, and philanthropy as major pillars. The challenge they had was how to communicate this strategic map to all hospital workers at all levels of the organization.

In conjunction with hospital administrators, Simon Robinson helped to develop a solution based on the philosophy of wholeness in *Holonomics*. (Robinson and Moraes Robinson, 2017)

The overall objective was to communicate the new strategy to all 4,500 members of staff. These staff work at all levels in the organization and the communication would not be limited to particular levels of management. Because of the nature of their work, no single individual could be away from their positions for more than one hour. The urgency of the experience was evident. Robinson used the technique of gamification to create a compelling educational experience which engaged workers emotionally, bringing them together to develop a sense of being one team.

In order to be effective, the solution had to take into account not only the corporate culture of the hospital, but also the national social dynamics of Brazil. Brazil is a country with vast inequality, which has resulted in a society where the distances between social classes (not just between the very top and the very bottom) are far greater than equal societies such as Sweden or the United Kingdom. The design brief was to create an event which brought together people from every level of the hospital: porters, security staff, janitors, secretaries, receptionists, nurses, nutritionists, managers, doctors, executives, directors, and surgeons. With some guidance, workers decided for themselves where to sit at one of ten tables, which could seat up to ten people each. The goal was for each table to be a kind of microcosm of Hospital Sírio Libanês itself, consisting of a wide mix of stakeholders across all departments of the hospital. The mission and character of the hospital were represented by each table group as a whole and also through each person seated there. Every table contained the strategic map told as a story, stretching from one end to the other. Each story was therefore so long that one person could only read a part. Doctors and surgeons listened to secretaries and nutritionists tell the story of how the hospital aimed to get to 2020, and so this was a way to dissolve the social hierarchy almost without people noticing, moving away from hierarchical social dynamics and towards an experience of wholeness.

4   Rationale

Holonomics and the Emergent Educational Leader in the 21st Century

Educational leadership development courses must incorporate learning objectives and instructional strategies that fully prepare students to face the intricacies of the 21st century. Today's schools are complex organizational systems influenced by ever-changing internal and external forces. In a world of uncertainty, traditional mental models can no longer meet the demands placed on emergent leaders. Barry Richmond (2010), a systems thinking advocate, urged the public to understand that, "In order to achieve this evolution, we must overcome some formidable obstacles. Primary among these are the entrenched paradigms governing what and how students are taught." (p. 4) Richmond further described mental models as selective abstractions of reality that we create and fixate in our heads. He affirms that no significant progress will be made until we feel comfortable embracing expansive mental models that transgress horizontally-extended and vertically-restricted boundaries.

According to the Global Cities Educational Network (GCEN) (2014), by the time K-12 students graduate from high school they must be proficient in three competencies: cognitive, interpersonal and intrapersonal. Each one of these broad competencies includes higher levels of critical thinking and creativity, two elements identified as essential in the

transnational economy. Just as important, leadership is considered a necessary 21st-century interpersonal competency.

Leadership can be difficult to define because it includes aspects of communication and collaboration, along with a sense of vision for the future and competencies working with people. More broadly, leadership is not just a competency but a set of competencies. For example, a study conducted across Asian countries suggested leadership involves initiative, building consensus, innovating new strategies, and implementing policies and programs in collaboration with or under the direction of others (Berman et al., 2013). Moreover, because leadership involves working with and managing other people, including their competing priorities, collaboration is an important competency for a leader to possess. Research also suggests that the nature of leadership may be changing. Statistics show that an increasing number of college graduates will find employment in an organization they started themselves. (GCEN, 2014, p. 6)

Incidentally, the GCEN (2014) report indicates that educators can influence the mastery of these competencies. The benefits of integrating holonomic thinking are considerable, particularly for pre-service educational leadership courses, above all because students and the school community would be directly impacted by future school leaders' decisions and planning. By coaching educational leadership students how to grow from mechanistic to holonomic thinking, the results would be richer, varied and long term, and would lead children to accomplish the competencies mentioned above.

The emergent educational leader of the 21st century will encounter multiple paradigm shifts in their careers. Responding to intricate dilemmas with the traditional "this is the way we have been doing business here" is no longer a pragmatic answer. Satterwhite, Miller, and Sheridan (2015) speak of a new trajectory in leadership development as we move towards a new conceptual era. They explain, "that by 2050 many of the paradigms of the modern life will have more fully complete the dramatic shifts that have already begun, further contributing to this new context of leadership." (p. 17) They argue that prevailing or established contextual paradigms, such as leadership, will shift from focusing on the characteristics of the individual to learning about the capacity of the systems. Other contextual paradigm shifts would include education, wich is expected to move from knowledge retention as a core objective to instead recognizing the value of systems and emotional intelligence. Practices, such as problem-solving, would no longer be reactionary and risk averse undertakings, but rather a way of creating desired social futures. The integration of anthropocentric and ecocentric perspectives would be necessary to having a collective view of the world, as well as to understanding that we stand as a part of nature. This new context of leadership and practice aligns with the tenets of holonomic thinking.

Higgs (2003) points out that inter-personal relationships and intrapersonal learning are essential for emergent leaders in the 21st century. After reviewing several models of effective leadership, Higgs lists conscientiousness, integrity, motivation, self-awareness, and intuitiveness as key intrapersonal elements of an emotionally intelligent leader. Correspondingly, holonomic thinking places particular importance on intuitiveness, one of the four ways of knowing. Higgs defines it as "The ability to use insight and interaction to arrive at and implement decisions when faced with ambiguous or incomplete information." (p. 279) An additional competency is the ability to *engage* others in a collective vision and find appropriate ways for individuals to contribute to the overarching goal. The organization must be valued as a network of relationships that

connects all individuals, the community, and the ecosystem. Management of human resources is acquired by interrelational means, not just based on quantitative results. Hence, developing quality relationships is the root to sustainable and fruitful organizations.

The instructional techniques associated with Holonomics thinking can be accomplished at little to no cost. Gamification, experiential learning, project-based learning, dialogue and storytelling methods can be easily implemented. For this practice to be beneficial, the instructors should be properly trained on the holonomics theoretical and operational frameworks as well as the complementing seminar strategies. Training should be consistent and long-term to guarantee that instructors integrate these approaches efficiently and meaningfully, and so that they may become knowledgeable and proficient themselves at reaching a holonomic thinking level.

The need to improve educational leadership skills is urgent, as unpredictability at all levels of social life is prevalent in the present times. In *Leading from the Emerging Future: From Ego-System to Eco-System Economies*, Scharmer and Kaufer (2013) state:

This inner shift, from fighting the old to sensing and presencing an emerging future possibility, is at the core of all deep leadership work today. It's a shift that requires us to expand our thinking from the head to the heart. It is a shift from an ego-system awareness that cares about the well-being of oneself to an eco-system awareness that cares about the well-being of all, including oneself. (pp.1-2)

5 Conclusion

The integration of holonomic thinking in leadership development courses offers the promise to empower school communities. The capacity to see complex issues from multiple perspectives would be of an extraordinary advantage for educational leaders. Educational leadership and administration programs have the obligation of designing a curriculum that amplifies students' critical thinking and providing instructional methodologies that are better fitted to respond to the existing and forthcoming educational undertakings and social climate.

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