

Designing alternatives: Design thinking as a mediating learning strategy to bridge science and the humanities for leadership learning

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Introduction

The call for this special issue defined *education* as a systematic process of instruction and further specified *learning* as the action of creating, modifying or reinforcing existing knowledge to create new understanding. Here, we think of the process similarly, but framed by a slightly different paradigm. Drawing on the work of educational anti-consumerists such as David F. Noble (2002) as well as design theory (Cross, 2006; Dorst, 2011; Farrell & Hooker, 2013) and adaptive leadership (Heifetz, Grashow, & Linsky, 2009) we frame the complex interactions involving teaching and learning along a spectrum bracketed by *training* on one side and *education* on the other. Training is a process which generates objective knowledge in order to make a person functional within someone else's system or industry (Noble, 2002, 2013). In other words there is no direct connection to the self or personal development. In contrast, education, at its best, is total integration of one's self with the knowledge they absorb and eventually synthesize for their own self-learning (Noble, 2002). When choosing between training and education we, as a nation, have often chosen the former in the name of workforce development and economic progress, but at what cost?

A Wicked Problem: Education, Commodification, and Leadership Learning. Since compulsory public education entered the national mindset around a century ago (Slawson, 2005) educators, researchers, policymakers, consultants, and the general public have struggled to define both form and function within our nation's system of education. Increasing technical and technological imperatives along with the need to address more complex social challenges have only exacerbated the depth and breadth of preparation required of students and teachers. Most recognize the need for skilled engineers, doctors, businesspeople, etc. but often confuse the need for highly trained professionals as a replacement for highly functioning citizens in both vocation and community (Noble, 2013; Taubman, 2010). Finding the balance between technical preparation and holistic development has proven elusive writ large with a majority of public emphasis being placed on the technical side of the spectrum more often than not.

The immense challenges of contemporary society require both technical and social attention. Many of these challenges involve a number of politics and are inherently value-laden. Such problems are said to be very *Wicked Problems* because not only are solutions unknown, but the problems themselves may not be readily identifiable or rooted in values that are agreed upon (Head & Alford, 2013; Heifetz et al., 2009). Figure 1 demonstrates how these problems compare to more straightforward or *tame* problems. Figure 1 accounts for both the complexity of a given problem, as operationalized by Heifetz and colleagues (2009) and social diversity as discussed by Head and Alford (2013). This relationship demonstrates the massive challenges for which educators must attempt to prepare students.

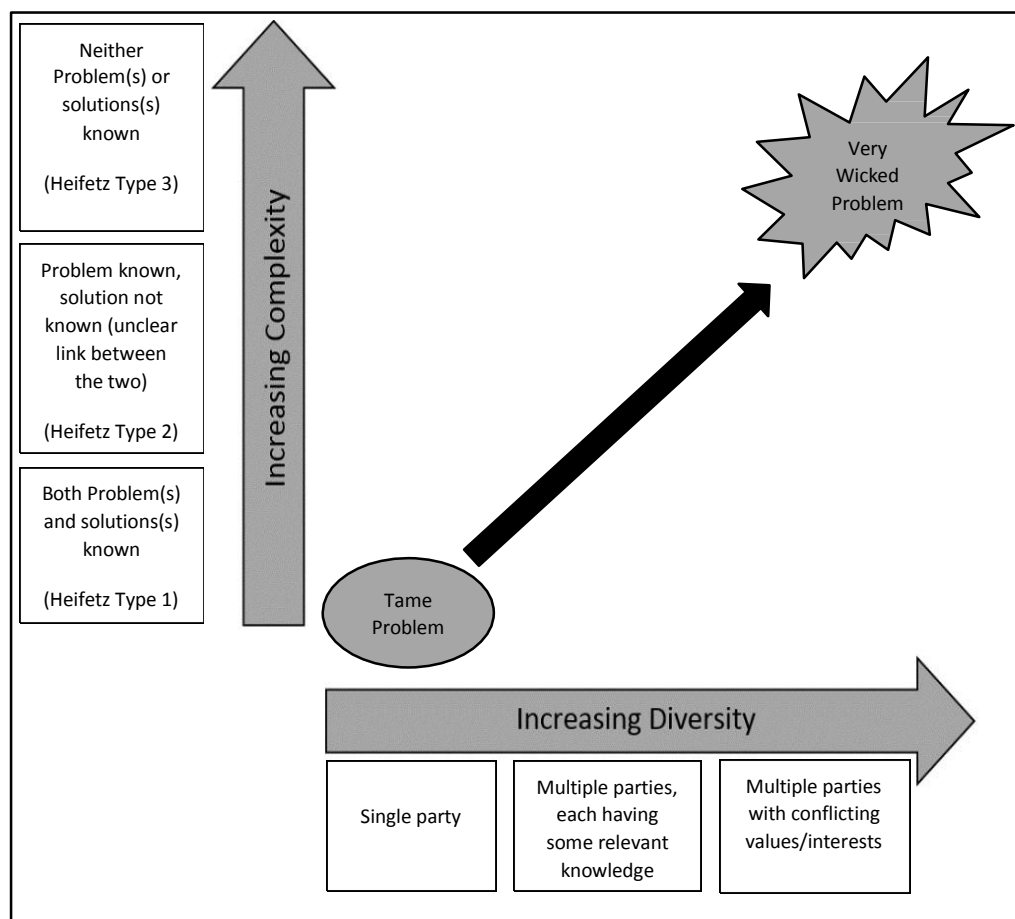


Figure 1. What makes a very wicked problem? Adapted from Head and Alford (2013)

Unfortunately, the traditional teaching strategies employed throughout modern educational history do not offer a method or model with which to conceptualize, much less begin to solve such wicked problems. Only by understanding the conceptual underpinnings that support

contemporary pedagogy and andragogy might we begin to create educational spaces that help us solve such complex challenges.

Concerning Ontology, Epistemology, and Commodification in Leadership Education

It has been remarked that leadership is an amalgam of the arts, humanities, and sciences (Gardner, 2006; Wheatley, 2010). Such an integrated field is attractive to many, but there are challenges to finding appropriate methods with which to create learning environments that are conducive to developing the interdependence and awareness contemporary leadership paradigms propose. Furthermore, the ways students today receive educational programs focused on leadership for social justice is heavily dictated by how they value knowledge, understanding, and learning. In this idea brief we will first examine how western ontology and epistemology have impacted the manners by which all education writ large and specifically leadership education have developed. Second, we will discuss how privileging metaphysical world views have contributed to an unbalanced approach from both faculty and students and ultimately disintegrated leadership learning from the core curriculum. Finally, we will suggest an approach for reintegrating subjective and complex epistemology into the empirical base of contemporary leadership education.

Much of the challenge associated with promoting education above training has to do with the manners by which we value teaching and learning as a nation. To be clear, everyone has their own value set, but there are also greater trends within the common social agreement surrounding ontology (the nature of our world/universe or “what knowledge is”), how we come to know (epistemology), and the best learning experiences to facilitate learning (pedagogy or andragogy which might also be referred to as teaching and learning strategies). In recorded western history, these values have shifted and settled throughout various time periods. Brent Davis (2004) provides a model for understanding the relationship among prevailing ideologies/values that inform ontology, epistemology, and pedagogy/andragogy. Table 1 summarizes Davis’ work and highlights the implications for teaching within each paradigm.

Table 1. Taxonomy of western thought and resulting teaching strategies adapted from Davis (2004)

Ontology – Nature of our World	Epistemology – How we come to know	Pedagogy/Andragogy – Facilitation of learning
The Metaphysical There is one <u>Truth</u> . Provided that one studies with enough rigor, Truth can be known.	Gnosis Has to do with big questions (i.e. The meaning of life, our purpose in the universe, etc.) These questions are generally addressed through narratives that provide context, ascribe purpose, and provide meaning.	Mysticism – “Teaching as Drawing Out” Assumes that all learners, as part of a grand creation, already have the Truth within them and uses natural phenomena to draw out understanding.
	Episteme Has to do with the day-to-day knowledge necessary for function in a given social setting. Focused on practical and immediate aspects of experience	Religion – “Teaching as Drawing In” Concerned with drawing students into established systems and doctrines. More responsibility is placed on teaching than learning. The learner’s self-development is secondary.
The Physical There are many <u>truths</u> the nature of the universe is interdependent, ever-changing and cannot ever fully be known.	Intersubjectivity Assumes all knowledge is a matter of social interaction. Effectively, everything that is important to know is dictated by our social needs and agreements	Rationalism – “Teaching as Instructing” Concerned with deductively seeking the Truth through logic using facts that are known (or believed to be known)
	Interobjectivity Acknowledges the confounding entanglements associates with understanding the world. Suggests that by measuring the world we change it, and are in turn changed ourselves.	Empiricism – “Teaching as Training” Concerned with inductively seeking the Truth through, typically using scientific method. Involves scripted movement through courses and assessments.
		Structuralism – “Teaching as Facilitating” Focused on language and how we structure belonging. Knowledge and teaching is about facilitating productive interdependent integration of unique individuals into society.
		Post-structuralism – “Teaching as Empowering” Also focused on language, but more interested in those concepts or individuals that are typically marginalized or left out. Empowering voice, agency, change, and inclusion are often sought outcomes.
		Complexity Science – “Teaching as Occasioning” Concerned with complex patterns and relationships of social, natural, and technological entanglements. Engaging, modeling, and finding meaning in wicked problems
		Ecology – “Teaching as Conversing” Concerned with connectivity in all things. Conversation and valuing of all positionalities in order to come to social/natural balance rather than agreement.

It is not within the bounds of this brief to approach the depth with which Davis (2004) discusses the historical and archeological implications of the various teaching strategies noted in Table 1. However, the taxonomy provides an excellent framework to illustrate an anecdotal concern that many educators share when confronted by students who just want to know what is going to be on the test. Here, the delineation between the Metaphysical and Physical and the resulting ontological repercussions for education cannot be understated. Given the emphasis on the metaphysical we submit that contemporary education more often lends itself to a particular emphasis on Religion, Rationalism, and Empiricism as key contributing teaching and learning strategies (it should be noted when we discuss religion we are referring to the teaching strategies that have grown from religious epistemology rather than any specific faith itself). Figure 2 illustrates the imbalance that is fostered by such ontological emphasis.

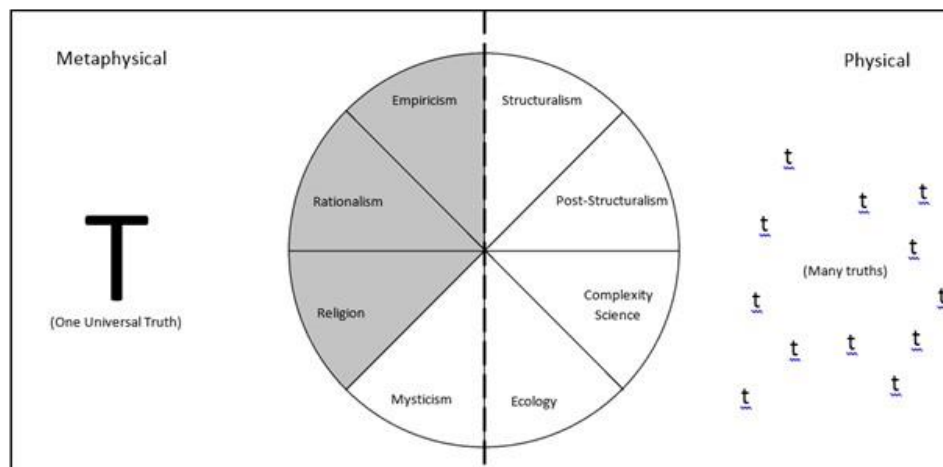


Figure 2. Privileged Instructional Methods *adapted from (Davis, 2004)*

The preference for singular, repeatable, evidence-based, proof is the purview of training, not education. Today Science, Technology, Engineering, and Math seem to be the gold standard when it comes to expected outcomes of public education (Education, 2015). Their epistemological connection to the metaphysical ontology is unquestioned and their practicality for the workforce is defined. Other subjects are less privileged contemporarily. While language arts are still recognized as necessary you see very few national programs support anything beyond basic literacy. Still other subjects within the liberal arts, humanities, and fine arts are generally marginalized or outright questioned with regards to their validity. We submit leadership education too often falls among fields that are relegated to a marginalized role.

Some would argue that claiming leadership as a marginalized field is foolish given that it is a multi-billion dollar per year industry when you consider all of the leadership books, trainings, psychometrics and speaking/consulting fees that are exchanges each year. Indeed the buying and selling of leadership philosophies, models, and workshops is almost a national past time among organizations both public and private (Block, 1998, 2009). However the popularity of leadership in contemporary society has not vaulted the field into a place of value in the contemporary core academic curriculum. As far a common academic preparation is concerned, leadership remains elective, ancillary, and/or extra-curricular in many educational contexts (Seemiller & Murray, 2013). Furthermore we submit that the relative success of the leadership industry juxtaposed against the relative marginalization of the field within the academic core is evidence that something else is going on as opposed to true student learning.

Not only is the leadership subject matter held in less esteem than certain other subjects, pedagogical support for facilitating leadership learning has fallen out of favor. This is not necessarily true among leadership educators but, generally speaking, students, parents, and the general public have often become predisposed to valuing a certain type of information delivery and instruction by the time they reach our classrooms. Standardized national curricula and instructional accountability have largely removed the all-important relationship between teacher and student and created a consumerist relationship between teacher and student (Taubman, 2010). In this paradigm, capital in the form of time, work, and/or money are traded for information. Students have shared their belief that it is the expert's job to deliver information (re: Truth) to them regarding a given subject and their role is to serve as a pail to collect the knowledge that is bestowed on them (Clegorne & Mitchell, 2013). This is the notion of commodification in its very essence.

Commodification refers to the process by which depth and understanding of a concepts is coopted in order to facilitate easier transaction. Consider the eggs you might have eaten for breakfast this morning. For many, eggs are a commodity: you go to the store, pay the price on the carton, and take your eggs home without much thought. Now consider the eggs that your

great, great grandparents may have eaten. They might have raised chicks from hatchlings, cooped and fed the birds as necessary, cleaned the cages, and harvested the eggs. Eggs are likely far more commodified for us than they were for our ancestors. Unfortunately, education has suffered a similar commodification process. Noble (2002) shares a three step progression by which education has been commodified in the United States. First, educators focused less on the learner and became more interested in tangible, delimited collections of course materials (subjects, units, lessons, exams, etc.). Engaged educators, of course, recognize that these materials in their own right are simply tools, but in the eyes of a trainer they become goods and services. The second shift was the arbitrary fragmentation of integrated concepts into courses. This step was particularly damning because it disintegrated holistic learning and bind it into property delineated by limited learning outcomes; a commodity that has an owner and can be sold for profit. The third step is quite simple and involves the process by which tuition, state dollars, or other capital is exchanged for a given instructional unit (Noble 2002, 2013).

Design as a model for reintegration in leadership education. We would argue that commodification is a generally poor idea for any subject matter given that commodities make no demand on our skill or attention and require little to no thought. Alternatively, we may be better served to acknowledge that commodification is simply a misstep resulting from over-privileging a metaphysical world view in leadership education. In keeping with our assertion that instruction methods often associated with the sciences subscribe to one universal *Truth* and the arts and humanities tend to focus on subjectivity and the interdependence between many *truths* we suggest a more balanced approach is warranted. Such an approach has been in existence for over 40 years in *design thinking*, but has, frustratingly, never gained traction within mainstream education policy or curriculum. As such, many of the seminal texts described here are dated, but nevertheless compelling.

Design, in the simplest terms, is the process of creating something that did not exist previously (Cross, 2006; Rowland, 1993). In our context, this new creation or conceptualization of learning in a student. But beyond this surface definition of the concept, designers are reluctant to oversimplify the complex processes involved (Dorst, 2011, p. 521). One of the foundational documents in design comes from Rittel and Weber (1973), who argue that “the search for scientific basis for confronting problems of social policy [are] bound to fail” (p.155) because these problems are inherently *wicked*. As we have discussed *wicked* problems have many unique characteristics, not least of which is their resistance toward the right-wrong solution that a scientific approach seeks. They are also interconnected, unique to the context, and not immediate or ultimate in their solutions (Rittel & Webber, 1973).

Design as a method promotes “its own distinct things to know, ways of knowing them, and ways of finding out about them” (Cross, 2006, p. 221). The literature in design thinking claims that science values objectivity, rationality, neutrality and truth while the humanities value subjectivity, imagination, commitment and justice (Cross, 2006; M. Davis, 1998). We suggest that this dichotomy roughly matches that of the metaphysical/physical dichotomy described earlier. As a mediating method, design offers its values as practicality, ingenuity, empathy and appropriateness (Cross, 2006). Design authors acknowledge that in order to “get things done” knowledge from both scientific and humanities background must be applied.

As an example I recall a story told to me by a colleague. Our colleague was working on a grant to bring modern farming techniques to rural villages in developing countries. One particular initiative involved providing a tractor to a certain village in order to increase planting and reaping speed to grow more food for the malnourished villagers. The villagers were given the tractor and taught how to use and repair it and our colleague and his team returned to the states. After a few years the team returned to the village and found the tractor rusting beside the field where the village's crops were grown. The initial assumption was that the tractor had broken down and the villagers had been unable to fix it, but after some investigation the team learned that the tractor had not been used even once. The villagers explained that they did not want to be impolite and reject the tractor as a gift, but that mechanized planting and reaping had no place in their society. Planting and reaping were communal times for the village and provided imperative connections to each other and the land. Ultimately, no harm was really done to the village, but no solutions were produced either and hunger continued. From the prospective of science, technology was the answer to food production problems; from the humanities, perspective technological encroachment was an affront to the villagers' way of life. Neither perspective offers a balanced enough approach to solve or even understand the wicked problem involved with meeting the needs of the village.

Design provides great hope for creating generative educational environments with which to create sophisticated solutions to wicked problems. It would not be in keeping with the philosophy of design to dictate a specific method since every scenario is unique, but there are guidelines summarized by Nigel Cross (2006). Design as a process is best implemented with ill-defined problems. Consider the example of the village and tractor above: Is the problem technological, spiritual, social, or a mix? Designers look at the situation and employ a problem solving mode that is *solution focused*; practical in every sense of the word rather than theoretical or idealistic while maintaining thinking which is constructive. From the perspective of the designer, the villagers' approach isn't practical because they may starve to death, nor is the aid team's approach viable because the local population will not adopt it. Through the use of qualitative coding and modeling, a design team might better develop a solution that allows for the social imperative of planting and reaping all while increasing crop yield to support the nutritional needs of the village.

We will not solve the village's problem here, but imagine the leadership learning you could facilitate if you asked your class to apply empathetic, solution focused, constructive thinking to solving this problem themselves. Or more to the point, imagine the possibilities of having your class engage a wicked problem in your campus' community. Design is no more a fix-all solution for leadership education than any method that has gone before. In fact this method is emergent. Designers have and continue to struggle with how to teach learners to utilize design (Jonassen, 2010; Rowland, 1993). Rather, design provides a bridge between the sciences and humanities that is sorely needed in the field of leadership studies. It allows diverse teams of students from different majors and backgrounds to come together and leverage both scientific knowledge and understanding from the humanities for practical problems solving and decision making. Imagine the learning that could come from a future engineer, mathematician, biologist, economist, thespian, and psychologist all practicing the process of leadership, followership, and active citizenship while working on the issue of social justice with a given topic like healthcare,

human trafficking, or immigration. Now that might be interesting.

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Author Biographies

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Jason Mastrogiovanni serves as the Director of the Office of First-Year Studies at the University of Tennessee, Knoxville. Mastrogiovanni is an advocate for collaboration and intentional design in higher education. He is currently pursuing a PhD in Educational Psychology with a specialization in Learning Environments and Educational Studies at the University of Tennessee, Knoxville.