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REPORT

## Using a systemic design paradigm to develop sustainability leadership and build organizational interdisciplinary sustainability platforms

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**Abstract** This article explores a doctoral sustainability leadership course in an interdisciplinary leadership program. Learners in the course study sustainability and sustainability leadership from a systemic design perspective. They are invited to become visionaries who work across boundaries and disciplines with cooperative and reflective spirits to find integrated solutions for complex organizational problems. The first section provides course background information on the interdisciplinary, interdependent, and integrated complexity of the sustainability movement. It also examines the different and often ambiguous understandings of sustainability and why a systemic design platform might provide a more expansive vessel for sustainability leadership and projects. The second section investigates systems thinking, design action, the nature of change, and dialogue—the core of good design. The third section uses a learner’s case study *Air Combat Command Sustainability Design Project* to illustrate how an organizational leader built a sustainability plan unique to his organization. Five domains (Ben-Eli, 2012) provided the overarching infrastructure. Although each domain embodies a separate area, together they make up a unified organizing principle that works toward integrating essential elements into a strong infrastructure. The article concludes with reflections from both the course facilitator and the course learner.

**Keywords:** *sustainability, sustainability leadership education, sustainability leadership development, systemic design, complexity, change*

### Introduction

This article explores a sustainability leadership course that uses a systemic design platform. The course rationale asserts that the more leaders encounter problems of the 21<sup>st</sup> century, the more they realize that complex situations cannot be understood in isolation. Familiar systematic problem-solving approaches or the “orderly sequence of events” which are methodical, sequential, and episodic have proved to be limited when dealing with complex issues (Banathy, 1996, p. 16). Instead, a new frame of reference needs to be adopted. A systemic design perspective provides a way of thinking and a format of practice that integrates complexity and invites innovation through an iterative designed evolution (Banathy, 1993a; Ben-Eli, 2012; Brown, 2009; Chick & Micklethwaite, 2011; Manzini, 2015; Nelson & Stolterman, 2012). At its best, the methods and tools of systemic design help leaders think in a less fragmented way and assist in facilitating change rather than forcing reactive change (Nelson, 1994b). Systemic design also offers a means to transcend “systemic complexities” by giving sustainability leaders a substantial framework when working through difficult and often messy issues (Wolfgramm, Coleman, & Conray, 2015, p. 649).

The paper is divided into three sections. The first section provides course background information on the interdisciplinary, interdependent, and integrated complexity of the sustainability movement. A three-pillared concept—environment, economics, and social equity—serves as a foundation to study the history of the movement, its key leaders and

thinkers, environmental policy, stewardship and conservation measures, and social responsibility principles. The second section explores systems thinking, design action, the nature of change from a systems perspective, and dialogue—the core of collaborative design. It also introduces a systemic design inquiry and why a systemic design platform might provide a more expansive and “protective container” for designing sustainability projects (Nelson and Stolterman, 2012, p. 3). The third section uses a learner’s case study to illustrate how an organizational leader built a sustainability plan from a systemic design platform. The final section offers reflections from both the course facilitator and the course learner on strengths and limitations of both teaching the course and implementing a sustainability plan. They also address how organizations can benefit from using a systemic design sustainability leadership approach and framework to build stronger organizational foundations when dealing with complex issues.

Traditionally institutional competencies are developed over time and are tied to professional military education. However, this process can be accelerated through the provision of the specific mission oriented competencies outlined above. Further, Voorhees (2001) noted the advantages of linking and then tracking the desired specific learning outcomes as derived from program mission statements (pg. 181).

Individuals and their relative experiences are different; thus, the learning experiences and resulting competencies developed are different, yet the goal remains the same: developing each Airmen with the skills identified above. Therefore we had to answer the question: How can this be achieved if every individual brings a differing suite of experiences to the table? The short answer is a program designed specifically for Civilian Airman that is flexible enough to adjust adult learning methodologies based on the experiences of a particular student cohort. This is the charter for the Civilian Associate Degree Program.

The Assessment & Selection: Competencies section of the Office of Personnel Management Website defines a competency as a measurable pattern of knowledge, skills, abilities, behaviors, and other characteristics needed by an individual to perform work roles or occupational functions successfully. Competencies specify the "how" of performing job tasks, or what the person needs to do the job.

### **The sustainability movement**

Learners who take the sustainability leadership course are doctoral students engaged in an online interdisciplinary leadership program. They come from a myriad of interdisciplinary professions that include elementary education, higher education, athletics, nonprofit, healthcare, business, and the military. Their reasons for selecting the sustainability leadership course are varied. Some are concerned about the longevity of their organization; others are feeling increasing outside pressure to include sustainability into their organizational plan; still others take the course because sustainability leadership has become a popular term, and they are curious; and finally, there is a small but growing group concerned about the state of the Earth.

In many ways, the above comments reflect the diverse views of sustainability and sustainability leadership within academia and the public and private sector. Although the term “sustainability” emerged from the environmental movement of the 1970’s (Edwards, 2005), sustainability has become commonplace organizational language. Indeed, sustainability fits the 21<sup>st</sup> century organizational mindset because the term has become synonymous with complexity, change, and resilience (Callaghan & Colton, 2008; Pushnik & Hatfield, 2016). In this course, learners are encouraged to view sustainability from deeper and broader perspectives by exploring greater networks and patterns; collaborating across disciplines and organizations; and creating a more holistic, dynamic, and multi-leveled designed platform for problem solving (Ben Eli, 2012; Brown, 2009; Senge, Smith, Kruschwitz, Laur, & Schley, 2010).

### ***Finite earth: Limits of natural systems***

The course begins with an overview of the environmental and social state of the world. Meadows, Randers, & Meadows (2004) were the first scientists to point out that complex planetary problems cannot be solved from a linear perspective. Because of their pioneering work, “systems thinking” continues to provide a foundation for current sustainability discussions and possible solutions (Capra 2007; Edwards, 2005; Metcalf & Benn, 2013; Wolfgramm et al., 2015). Learners in the course explore the current trajectory of the planet from following viewpoints: the deteriorating ability to support life; the limits of natural systems; the inevitable impact of climate change; ecosystem degradation; resource exhaustion; and social and cultural disintegration. Terminology such as overshoot, linear growth, exponential growth, negative and positive feedback, sources and sinks, and the tragedy or opportunity of the commons help visualize problems from a much larger framework (Meadows et al., 2004; Senge et al., 2010). Stories of how environmental degradation impact indigenous people are also brought to the table so that learners can better understand the deep connection between the environment, economics, and social equity. As a culminating introductory activity, learners complete a personal or organizational carbon footprint assessment. The assessment serves as a comparative tool to measure personal or organizational consumptive patterns and look for possible areas of change.

### ***The evolution of the sustainability movement***

In the ensuing unit, learners explore the works of several philosophers and theologians and come to understand the worldwide sustainability movement as a major paradigmatic shift (Berry, 2009; Macy, 2007; Orr, 2011). Although there are similarities between the Sustainability Revolution and previous revolutions such as the Agricultural Revolution and the Industrial Revolution, the Sustainability movement differs in that it is a decentralized, worldwide phenomenon emerging from the ground up and spurred by diverse groups using alternative and diverse modes of action to take on the complex challenges of our time (Macy 2007; Edwards, 2005). Another course author, in his quest to better understand the movement’s momentum, discovered “over one—and maybe even two—million organizations working toward ecological sustainability and social justice” (Hawken, 2007, p. 2).

Course participants also become familiar with two major events that galvanized global recognition of the Sustainability movement. The first event was the 1987 publication of the United Nation’s Brundtland report, “Our Common Future” which asserted that sustainable development should “seek to meet the needs and aspirations of the present without compromising the ability to meet those of the future.”. The document also proposed that three fundamental criteria—environment, economy, and equality—needed to be addressed at local, regional, national, and global levels. These three components eventually formed a worldwide sustainability platform for countless organizations. The three-pronged format was also adopted by corporate business and renamed the “triple bottom line.” The triple bottom line went beyond traditional accounting standards and became a measuring framework that incorporated three dimensions of performance: social, environmental, and financial (Slaper & Hall, p. 4, 2011).

A second significant event in the evolution of the Sustainability movement was the 1992 Earth Summit held in Rio de Janeiro, Brazil. At the summit, global leaders continued to build from previous conferences, particularly the 1987 Brundtland Report, and agreed on an international action plan called Agenda 21, a blueprint that attempted to reconcile a quality environment and a healthy economy on all levels (United Nations Agenda 21, 1992). While the above two major events provide a basic understanding and grounding of sustainability, course participants also peruse a multitude of other principles, initiatives and alliances that include: The Earth Charter; The Houston Principles; The Hannover Principles; Permaculture

Principles; CERES Principles; Cradle to Cradle; The Precautionary Principle; Biomimicry Principles; and the LEED Green Building Rating System. In the most recent course, The Paris Agreement on Climate Change and Pope Francis's *Laudato si* Encyclical were added to the list.

Finally, learners read the works of several philosophers and theologians who maintain that the 21<sup>st</sup> century sustainability leader's most important work is to discover our interconnectedness with the web of life and to calibrate our human demands with what the Earth can sustain (Berry, 2009; Capra, 2007; Macy, 2007; Orr, 2011). As a culminating activity for the unit, learners write a reflective essay that addresses how bringing about needed sustainability change will require a different type of learning, a learning-by-action undertaken in a spirit of collaboration and co-inquiry. They also describe the leadership capabilities needed in bringing about this type of learning community, and they reflect how this praxis-reflection learning model fits with a greater consciousness required for 21<sup>st</sup> century leadership.

### ***Collaboration***

After the learners gain an overall understanding of sustainability terminology and philosophical underpinnings, they are invited to collaborate with one or two other participants from different disciplines. The intent of the activity is threefold. First, it expands the students' range of thinking by comparing and contrasting organizational values. Second, learners look into the future and decide what "limit to growth" (Meadows et al., 2004) will prove to be the most challenging for everybody's organization. Third, learners determine key factors in the problem and the new forces that are likely to shape it in the future. What does this mean for their organizations? They present their findings to the class as a map, a collage, a sketch or a descriptive paragraph.

An interesting phenomenon consistently arises around the third week of the course. Students begin to express frustration. In their discussion platforms, an important question rises again and again. "If so much is taking place, why is there so little progress?" Learners in the course come to the conclusion that although good ideas and a list of principles may show awareness, words do not provide a suitable foundation to tackle difficult problems. Another factor that creates concern amongst course participants is the consistent warning that due to the deterioration of the planet, the Sustainability revolution must happen much faster than previous revolutions.

### ***Sustainability's ambiguity***

Even though sustainability terminologies and sustainability leadership perspectives have flourished over the past decades, some thinkers are concerned about the ambiguity of sustainability rhetoric (Ben Eli, 2012; Callaghan & Colton, 2008; Metcalf & Benn, 2013; Metcalf & Benn, 2012). Although the broad concept of sustainability has come to include such diverse meanings as the triple bottom line, human social-cultural diversity, innovation, business and organizational transformation, corporate responsibility, and resilience (Dolva & Cowan, 2015), sustainability is not about single issues, and it can be a problematic concept for sustainability leaders and sustainability development (Dixon & Fallon, 1989; Filho, 2000; Metcalf & Benn, 2013; Wolfgramm et al., 2015). Questions such as: "What is sustainability? What is a sustainable society? What is a sustainable organization?" have been difficult to define (Marshall & Toffel, 2005, p. 673). Further, when sustainability is understood in a nonlinear manner and takes into account that complex, dynamic, interconnected systems are emergent and unpredictable, grasping a thorough understanding of a sustainable system can be confusing (Callaghan & Colton, 2008; Metcalf & Benn, 2013; Plowman, Solansky, Beck, Baker, Kulkarni, & Travis, 2007; Thompson & Cavaleri, 2010).

### *Sustainability leadership*

The difficulty of understanding the concept of sustainability from a systemic perspective carries over into sustainability leadership. Metcalf and Benn (2013) claim that the multiple leadership styles related to sustainability and the interpretation of how an organization can be sustainable puts an “extraordinary demand on leaders” and “requires extraordinary abilities” (p. 369). Sustainability leaders must know how to interact between overlapping levels of networks, and the chasm between the desire to incorporate and enact sustainability into these different levels can seem a daunting undertaking (Wolfgramm et al., 2015). Because a systemic perspective does not follow a step-by-step plan of action or fit into a particular protocol, sustainability leadership takes on a creative, iterative process where direction and movement is dependent on trial and error, feedback, reflection, and adaptability (Uhl-Bien, Marion, & McKelvey, 2007). Thus, the capacity to learn is integral (McElroy, 2006; Senge et al., 2010), and leadership must shift from a top-down directive approach to a relational leadership role that is comfortable with unpredictable change (Metcalf & Benn, 2012; Plowman et al., 2007). Attaining this type of sustainable organization can be a slow and expensive process with few guiding heuristics (Thompson & Cavaleri, 2010). From this perspective, Missimer, Valente, Meisterheim, & Johnson (2013) describes sustainability leadership as transformational and transactional leadership because complex problems demand a learning environment that continually embrace new attitudes, new skills, and new knowledge.

### *Outdated ways of knowing*

While the grassroots sustainability movement does speak to diversity and the importance of understanding ecological/social equity/economic problems at local and regional levels, sustainability practices at a planetary level are slow to gain momentum. Ben Eli (1997, 2012) feels the sustainability movement lacks cohesiveness and that genuine progress in managing the global environment will require an overarching, coherent, international structure.

Another part of the problem lies in our inability as leaders to envision “new societal responses” (Banathy, 1993b, p. 33). Our social systems, organizations, business models, and educational systems are still grounded in piecemeal approaches or eclectic maneuvers when it comes to tackling complex problems (Metcalf & Benn, 2012; Senge, Camron-McCabe, Lucas, Smith, Dutton, & Kleiner, 2012; Wolfgramm et al., 2015). System designers (Banathy, 1996; Nelson, 1994a) believe that today’s educational institutions are not so much mismanaged as out-of-date. In our attempts to change, we keep reshuffling the chairs because we are guided by a scientific and philosophical logic that favors separation, manageable pieces, and replication.

Staying within familiar yet narrow paradigms “constrains and delimits perceptions and locks us into prevailing practices” (Banathy, 1993a, p. 33). Rittle (1967) defined ill-formulated social system problems with confusing information, confusing ramifications, and conflicting values among decision makers as “wicked problems” (as cited in Churchman, p. 141). He also noted that efforts to tame these wicked problems usually fell back on practical step-by-step systematic problem-solving methods such as the following: understand the problem, gather information, analyze information, generate solutions, assess the solutions, implement, test and modify (Nelson & Stolterman, 2012, p. 16). However, using analytic and reductive modes of inquiry for complex situations often results in polarization, compartmentalized actions, paralysis, and leaders failing to see the problem as a systemic whole (Nelson & Stolterman, 2012).

## **Systemic design inquiry**

Systemic designers believe that a systemic design inquiry offers a more inclusive, integrative forum than a linear problem-solving step-by-step approach (Brown, 2009; Manzini, 2015; Martin, 2009; & Thackara, 2006). First, designers seek desirable outcomes. Ben-Eli (2010) defines systemic designing as “the process of realizing intentions” (key note address). Aspiring to a preferred outcome helps system designers to arrive at a solution or solutions by creating meaning and shaping order within multiple levels of reality (Nelson & Stolterman, 2012; Schon, 1987; Stolterman, 2001). Second, a design culture allows leaders and learners to create meaning from their unique histories and carries an opportunity to unite both knowledge and knowing (Manzini, 2015). Finally, systemic design presents a means to escape a rational and mechanistic paradigm and embrace a world that is “informed by our growing understanding of the complexity and interconnectedness of living systems” (Nelson, 1994a, p. 51).

### ***Systems thinking and design action***

Designing and building a coherent sustainable organizational structure on a smaller scale is a major project for leaders taking the interdisciplinary sustainability leadership course. In order to accomplish this endeavor, an important distinction between a multi-disciplinary approach and an interdisciplinary approach toward problem solving must be made. A multi-disciplinary approach is a collection of ideas from different disciplines. It adheres to a uniform problem-solving framework (often in outline form) that attempts to reach a solution through compromise. However, when the problem is complicated, a multi-disciplinary solution often fails because it cannot properly contain complex issues. An inter-disciplinary approach, on the other hand, examines issues from a systemic design perspective, thereby integrating many diverse levels, many points of view, and many disciplines. In doing so, inquirers look for connecting patterns, interacting relationships, and points of difference. Thus, while a multi-disciplinary approach might result in a compromised list or set of recommendations, an interdisciplinary approach embraces a creative composing process, a “compositional assembly” that unifies relationships and connections between elements (Nelson & Stolterman, 2012, p. 159).

In our sustainability leadership course, learners embrace an inter-disciplinary systemic design perspective that synthesizes two important intellectual traditions (Nelson, 1994a; Nelson & Stolterman, 2012). Systems thinking offers the conceptual, theoretical component. It helps conceptualize the complexity, the interconnectedness, and the nonlinear dynamics of organizational systems. Design action provides the pragmatic or the operational component. It utilizes a compositional process, a creative discipline decision making inquiry carried out in iterative cycles that work toward a preferred outcome. Woven together, systems thinking and design action provide a “synergistic potential” or a powerful method to guide change, deal with complexity, and stir innovative practices within organizations (Nelson, 1994a, p. 52)

### ***Understanding change from a systemic design perspective***

Designers often point toward living systems as approximations of how a design process works. Bateson (1991) used living systems as examples of systemic change. Change happens in the movement, in the variables, in the perimeters, in the embodied shaping processes between levels of learning that allow participants to make connections because of difference. In the transcendental (linear perspective) world of moving from point A to point B, we often believe we can predict change. However, in the biological world of living systems, change does not occur through force and impact, but through felt difference that comes about by means of trial and error. Change cannot be pegged because one cannot know “when” and “what kind” of change might occur. Nelson and Stolterman (2012) assert that while change has many meanings, it has “considerable importance in a systemic design context” (p. 37).

However, change within a systemic design platform does not come about from a “problem-based reaction,” but rather is “triggered by human intention” (p. 38).

Ben-Eli (2009) also writes that the concept of change can be “full of contradictions and paradoxes” (p. 5). Like any systems thinker, he understands that although stability/change are contrasting conditions, they are inseparably linked. Like Bateson, he notes that change occurs in different levels. First order change is change which “occurs within a system where the system itself remains invariant.” Second order change requires “a fundamental discontinuity and a shift in logical levels,” and this is where transformation occurs. Learners in the sustainability leadership course study these differences prior to project building, because the logical typing between first order change and second order change allows student designers to deepen and enrich their observing.

### *Collaborative reflective practice, the art of conversation, and ethics*

In a systemic design format, participants collectively define the values and qualities they seek by engaging in a disciplined inquiry. However, this purposeful intention is not without ethics for several reasons. First, designing is an inquiry-based reflective practice that constantly questions itself as the context evolves. Second, design is a human-centered and collaborative endeavor that seeks to develop empathy as well as respect the rights of clients. Third, as designers and clients seek to create a desired outcome together, they must practice the art of conversing and the art of trust, because it is in these arenas of participation that collective learning takes place (Nelson, 2004). Creating a seamless experience between designer and client requires shared knowledge, and this desired reality approach centers around the art of conversation. Churchman and Banathy, pioneers in the field of systemic design thinking, used the root definition of the word conversation, “to turn together,” as a central tenet for design inquiry (Nelson, 2004, p. 261). Fourth, designers embrace the whole person, considering intuitive originality and invention just as essential as analytical mastery. Finally, because it works toward a preferred outcome, a systemic design platform is a democratic and inclusive practice that has the potential to bring about both individual and collective fulfillment.

### **Project building**

As a cybernetic systems designer, Ben-Eli (2012) emphasizes a comprehensive conceptual structure (systems) and pragmatic action (design) that works toward a preferred outcome. Like other systemic designers (Carson, 2016; Thompson & Cavaleri, 2010), he considers achieving a dynamic equilibrium as key to understanding sustainability. From this perspective, he pays attention to how systems learn and maintain; to the inter-relatedness of stability/change; to the difference between first order and second order change; to how systems adapt and evolve, and to how systems self-organize and regulate. His concept of sustainability (2010) reads:

A dynamic equilibrium in the processes of interaction between a population and the carrying capacity of its environment such, that the population develops to express its full potential without producing irreversible adverse effects on the carrying capacity of the environment upon which it depends. (p. 297).

Ben-Eli (2010; 2012) is also in tune with the idea that we cannot change behavior without changing the internal structure. Instead of attempting to change the outcomes (conventional problem solving), he works on redesigning the underlying structure with five integrated, interacting domains. Although each domain or building block embodies a separate area, together they make up an integrated, interacting organizing principle—a unifying infrastructure. In the sustainability leadership course, learners develop their projects with this idea in mind. They design and build an underlying structure unique to their organization.

Brown's (2009) design phases—inspiration, ideation, and implementation—make up the organizing template (p. 16). Rather than follow a sequential order, students are invited to create an iterative, nonlinear journey that will loop back through these spaces more than once as they refine ideas and explore new directions.

Below is an organizational case study thumbprint that was designed by a course learner from the military field. Five sections are included in the case study project: introduction, inspiration, ideation, implementation, and a conclusion. Each section of the project will be introduced with background information from the course facilitator followed by the case study example from the course learner.

***Introduction – background information (course facilitator)***

Before starting their sustainability design process, students write introductory information about their organization. In redesigning their organization for sustainability, they are encouraged to include not just their organization, but the surrounding community and ecosystem (Metcalf & Benn, 2012; Wiengarten, Lo, & Lam, 2017). Looking at a bigger picture helps instill what Senge et al., (2010) describe as the need to collaborate and partner across disciplines and sectors. Working alone does not fully address the complexity of the global ecological, social, equity, and economic problem. Rather stewarding healthy commons requires “thinking about the larger system your team or organization is part of and recognizing that business-as-usual practices could easily end up causing everyone to lose” (p. 172).

***Case study introduction – (course learner)***

Offutt (55<sup>th</sup> Wing) is part of the 12<sup>th</sup> Air Force, a subdivision of Air Combat Command. Strategic Air Command and Air Force Weather Agency headquarters are both located on Offutt Air Force Base (AFB). Offutt is a Department of Defense controlled military base. The 55<sup>th</sup> Wing is composed of the 55<sup>th</sup> Operations, Maintenance, Mission Support, Communication, and Medical Groups, all of which have their own squadrons. The six groups and 32 squadrons execute worldwide intelligence, surveillance and reconnaissance, electronic attack, command and control, presidential support, and treaty verification missions. Each branch of the U.S. military is represented among the approximately 12,000 military and federal employees assigned. Below is a chart depicting the structural organization of Offutt AFB (Offutt, 2014).

|                  |   |
|------------------|---|
| Institution Name | United States Air Force                                     |
| Address          | 906 Sac Blvd. Bellevue, Nebraska, 6811                      |
| Control          | Government  |
| Community Type   | Standard urban, middle-class community                      |
| Population       | 50,137 (Bellevue NE, 2012)                                  |
| State            | Nebraska  |
| County           | Sarpy   |
| Elevation        | 1,052 ft.   |
| Terrain          | Sloping, tiered site  |
| Soils            | Predominantly clay and sand                                 |
| Ecosystem        | Tall, grass prairie with Platte River running near the base |

***Inspiration – background information (course facilitator)***

The inspiration stage is twofold. First, leader-practitioners formulate a vision. In dealing with something as complex as sustainability, Ben-Eli and other systematic thinkers warn against a

*systematic* approach—starting with a problem and then presenting a linear set of goals. Instead, they recommend a *systemic* approach that starts by describing a vision. Meadows, Randers & Meadows (2004) write, “Visioning means imagining, at first generally and then with increasing specificity, what you really want. That is, *what you really want*, not what someone has taught you to want, and not what you have learned to be willing to settle for” (p. 272). Second, even though the learners have been introduced to several sustainability definitions throughout the course, they decide on a sustainability definition that works best for their organization. What definition makes the most sense to present to a group or organization at this particular time? Learners are encouraged to use a definition that provides a useful tool when implementing change, knowing that defining sustainability will evolve as their organization adapts to emerging concepts and practices.

*Case study – inspiration (course learner)*

**Vision.** From our definition, we simply want to do our job without compromising the future. How will we do this? This vision involves getting baseline numbers for the flying and mission support related aspects of our mission. The categories below would require baseline numbers, which would be reviewed semi-annually for all military installations. This would put long term ownership on base leadership.

|                    |                                   |
|--------------------|-----------------------------------|
| Mission Support    | Flying Mission                    |
| Carbon Footprint   | Carbon Footprint                  |
| Energy Usage       | Energy Usage                      |
| Water Conservation | Flying Hour program Effectiveness |
| Waste Production   |                                   |
| Land Utilization   |                                   |

The preferred state here at Offutt would involve one where we make decisions based upon gradually lowering our overall sustainability footprint. This will ensure we are being environmentally responsible when making decisions, big and small. In an ideal situation, Offutt would “compete” with Air Combat Command bases for annual sustainability awards, with the winner of each Command competing at the Air Force level. This could turn into a “battle of the services” to encourage friendly competition between all service branches. It’s a win-win type of situation for all. Baseline numbers would include transparency with reporting both mission support and flying mission calculations. Bases would also include numbers from deployed assets when calculating the overall footprint. Only then could baseline numbers be compared with historical data from multiple bases.

**Sustainability.** For the purpose of Offutt Air Force base, we will define sustainability as combination between the triple bottom line and the 1987 Bruntland Report: “Economic, ecological, and equitable developments that meet Department of Defense needs of the present without compromising the future.”

*Ideation – background information (course facilitator)*

As a whole, the five domains provide a clear, unifying organizing principle designed to ensure effective responses and integrate essential elements. Leaders must take into account all the evolving variables. When does one domain ascend in importance while the others descend? When is it necessary to integrate two or more domains for a new project? Does change require first order change or second order change? This stance requires a flexible mind, a mind that not only knows how to move between different epistemologies or ways of

knowing, but also between the two types of processes: diffusion (the spreading of energies) or consolidation (the compounding of energies). When is imagination appropriate? When is rigor appropriate?

Learners are asked to examine each domain and identify priority points. They describe sustainability practices already established. Can they be improved? What other ideas make the most sense to their institution, organization or workplace at this time? They list ideas and explain selections for each domain. They also look for possible connections and points of integration.

*Case study – ideation (course learner)*

Ben-Eli (2012) gives us five domains, which together make up an integrated single unity. They work together to collectively enhance sustainability efforts. In this section, we will examine each domain and identify aspects in which they relate to Offutt Air Force, Air Combat Command, The Air Force, and the Department of Defense.

**Domain one.** The Material Domain “constitutes the basis for regulating the flow of materials and energy that underline existence” (Ben-Eli, 2012). This domain focuses on wasteful and inefficient processes, with a desired end state of lasting efficiency. Facility operations will be considered here. The material domain will be a key factor in determining whether it’s time for a short-term bandage type fix or if it would be more cost and environmentally effective to spend more now to save later. The base will have to do a good job conveying the best information to those who control the budget.

**Domain two.** The Economic Domain “provides a guiding framework for creating and managing wealth” (Ben-Eli, 2012). This domain focuses on making fiscally responsible decisions. Now is the time to consider long-term costs instead of focusing on the best-case scenario for the near future. In this domain, we will continue to develop on our recycling program as well as encouraging more solar powered energy sources.

**Domain three.** The Domain of Life “provides the basis for appropriate behavior in the biosphere” (Ben-Eli, 2012). This domain focuses on ensuring the essential diversity of all forms of life in the biosphere is maintained. Here we will consider the overall ecosystem of the base and surrounding areas.

**Domain four.** The Social Domain “provides the basis for social interactions” (Ben-Eli, 2012). This domain focuses on creating an environment that is encouraging all ideas to be heard, discouraging one individual or group from focusing on their agenda. This domain will encourage feedback, both up and down the chain.

**Domain five.** The Spiritual Domain identifies the necessary attitudes, the value orientation, and provides the basis for a universal code of ethics (Ben-Eli, 2012). This domain focuses on thinking outside the box thinking to assist global sustainability. It will further demonstrate our Air Force Core Values: integrity first, service before self, and excellence in all we do.

***Implementation – background information (course facilitator)***

Some thinkers call sustainability a “brave new frontier” because there is no blueprint (Bell & Morse, 2003). There is no one-size-fits all. Often, there is no step-by-step procedure. A good sustainability plan is “multi-scale, multi-disciplinary, and multi-perspective” (p. 1). Furthermore, leaders learn from doing, and leaders learn from experience (p. 5). They proceed through a gauging progress. In this phase of the project, leaders conceptualize design management. Thus, it is imperative to include solid metrics and indicators into their sustainability plan. Measurement will inform a leader about two important points. First, it shows progress. Second, it gives information in how to proceed or which new direction to take. Once leaders have all of the information, they can reflect, and they can act.

In this phase, leaders are asked to find a starting point or two starting points. From this vantage, they examine a communication plan, necessary education or training, tracking

metrics, and a management system. This is the where their leadership skills truly come into play. How do they handle the design process and the conflicting demands? What is the measurement of performance in managing their design? How do they deal with the relation between “What to do?” and “How to do?” (Stolterman, 1997).

*Case study – implementation (course learner)*

**Category one: communication plan.** An effective communications plan will be a key aspect of our sustainability efforts. Now that we are armed with a sustainability plan, we will use it to determine who, how, and when to communicate. Hitchcock, D. & Willard, M. (2008) tell us to be clear about how, when, and what will be communicated to stakeholders to keep our efforts moving forward.

**Category two: education or training.** Now is the time to develop our approach to ensure everyone is trained in our planned sustainability efforts. This will revolve around first and second order change. First order change is a linear progression and occurs within an invariant system. It could be thought of as going with what we are used to. Second order change refers to fundamental discontinuity and a shift in logical level. This nonlinear progression involves transforming from one state to another and requires getting out of comfort zones and learning new approaches (Ben-Eli, 2009).

Obviously, first and second order change will be necessary for our sustainability efforts. The recently installed solar powered lights on our parade field will more than likely be a standard for DoD bases worldwide. While this type of first order change will be painless, second order change will provide a leadership challenge.

**Category three: tracking metrics.** This phase will focus on generating order for the ideas developed for each domain. Our vision and ideation will be transformed from a list of ideas to a working sustainability solution. Here, our baseline chart from our vision will be filled in with initial values, which will give a starting point for each domain. Systematic thinking will come into play with the integration required for many projects. A key point of this phase will be setting short and long term organizational sustainability goals, and setting up direction for how this process will be monitored for continual improvement.

**Category four: charting plan or management system.** Initially, each base will meet with a sustainability director, specializing in systems thinking. This director will travel from base to base, empowering base task forces that will lead their respective base sustainability efforts. In the long run, these task forces will evolve into base sustainability inspectors, responsible for inspecting other bases. The end goal with this type of branching out would be to spread the wealth of sustainability knowledge DoD wide.

**Conclusion – background information (course facilitator)**

A strong, solid plan maintains an identity. At the end of project development, learners are asked to conclude their organizational design with a short section on how they intend to maintain the growth, the resilience, and the identity of their sustainability plan. As the plan evolves, progress will need to be evaluated using initial baselines. How is data (collected from surveys, interviews, and quantifiable data) used to move in new directions or deepen an existing plan? What type of feedback will allow the organization to learn from experiences? Ben Eli (2010) describes this ongoing synthesis as the ability “to connect to a new more comprehensive, more inclusive intention.” At this point, the process takes on the image of a spiral, “an entity that expands” and grows itself (p. 283). Although the sustainability plan is not identical to the starting conditions, it will maintain its identity and resilience if it generates and deepens into new dimensions.

**Case study – conclusion (course learner).** Offutt AFB can assist in lowering the global sustainability footprint. While we came up with baseline readings in our vision, this is not

something to simply update and forget about on a yearly basis. Best practices need to be considered, and ongoing updates will be mandated for this program.

The Air Force is already saving money by completing inspections via an online format. Our subject matter experts will do virtual semi-annual staff assistance visits, which will ensure all bases are compliant. This will be done using Management Internal Control Toolset online inspections. Best practices will be uploaded to an Air Force SharePoint website, accessible to all sustainability points of contact.

## **Final reflections**

### *Course learner reflection*

My reflection is based upon sustainability from personal, organizational and global perspectives. The systemic design of the sustainability course referenced in this article enabled the course learner to first examine his individual role regarding sustainability. Here, the use of a learning thermostat, the recent purchase of a more fuel-efficient vehicle, and other factors were examined when calculating their individual footprint. During the course, the course learner examined sustainability from an organizational perspective. As a military aviator, this eye-opening research revealed both the size of the organizational sustainability footprint, as well as current Department of Defense sustainability initiatives. This is simply the reflection of one learner and how he and his organization benefited from the understanding of the importance of implementing sustainability in their personal and professional core values and missions.

### *Instructor reflection*

My concluding remarks and reflection as an instructor are taken from learner discussion comments as well as learner evaluations. A high percentage of the students find the sustainability leadership course worthwhile; some even call it transformative. In the first two weeks, learners become aware of the increasing societal and environmental challenges of the 21<sup>st</sup> century. However, it is apparent that each year, learners come to the forum savvier and more concerned about society and the state of the planet. This is good news in that recognition of deep problems is growing, yet students also feel a desperation as to what needs to be done and where to start.

The strength of the course is that it provides learners with a unique forum to address complexity. Systemic design offers a framework for building an underlying platform (Ben Eli, 2012), and systemic design provides a “protective container” for maintaining the project as it grows and changes (Nelson & Stolterman, 2012, p. 3). Most students report that they have never been through a whole systems design process. Most find it interesting, a few find it exhilarating, and finally, there are always those who find it frustrating. The course project is not allowed to go past fifteen written pages. The finer projects meet that constraint because learners not only know their leadership role, but they also know how to work with impositions. When projects become too large, learners have taken on leadership roles other than their own. Composing and shaping are skills that need to be learned in systemic design. They are very different than following an outline. They are learned out in the field through action, reflection, and experience, and unfortunately, learners do not get to practice while in the course.

Some students complain that the project is not like writing a usual paper, instead it is like putting building blocks together. However, after they go through the process, they look back and see an abstract design. They learn that the process can be trusted, if leaders rely on action and reflection as their guide. My deepest frustration as an instructor is the eight-week time frame. Learning systemic design is a paradigmatic shift in understanding how to observe and act differently. A few weeks does not give students justice to tackle difficult conceptual

learnings nor practice the composing process of design. An ideal situation would be a two-semester framework. In the first semester, leader practitioners would study systemic design theory. In the second semester, they would build a project within their organization with the support of their colleagues.

In the same manner, our higher education systems need to change as well. With so much information and so much complexity, students often complain about feeling overwhelmed. Because so many changes occurring in the field of sustainability, leaders need a place to return for advice, for the latest sustainability information and measurement, for companionship and collegiality, for creating larger networks, and for sharing their stories. Universities could provide such a place.

As an instructor of sustainability leadership, my greatest challenge is facilitating a learning process that helps organizational leaders acknowledge the need for broader perspectives and new modes of inquiry. Organizations can benefit from using a systemic design sustainability leadership framework. Twenty-first century problems are complex, difficult, and messy. However, our problem-solving procedures, drawn from a rationale analytic perspective, often fall short. Leadership needs new unifying forums to help sort through complexities. Leadership needs to promote and design “new societal responses” (Banathy, 1993b, p. 33). Leadership needs to develop new skills for a changing world. Sustainability leadership from a systemic design perspectives can offer such a platform.

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