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Ecological Consciousness, Moral Imagination, and the Framework for Strategic Sustainable Development

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D ecades of scientific data irrefutably show that ecosystems on our planet are in decline, largely as a result of unprecedented unsustainable industrial production and consumption by humans. The Millennium Ecosystem Assessment (2005), which was called for in 2000 by United Nations Secretary-General Kofi Annan and based on the work of over 1,360 experts worldwide, concluded that human activity has led to the decline of global fish stocks, created climate change and nutrient pollution threatening water supply and other necessities for billions of people, and has "taken the planet to the edge of a massive wave of species extinctions, further threatening our own well-being" (p. 3). Given the depth of this crisis we are facing, there is an urgency to act swiftly and effectively. According to Lester Brown (2003), founder of the World Watch Institute and Earth Policy Institute, "Throughout history, humans have lived on the Earth's sustainable yield — the interest from its natural endowment. But now we are consuming the endowment itself,"

and what is required today is "an unprecedented degree of international cooperation to stabilize population, climate, water tables, and soils — and at wartime speed. Indeed, in both scale and urgency the effort required is comparable to U.S. mobilization during World War II" (pp. 25, 28). Brown (2003) pointed to the rapid transformation of the automobile and other industries for wartime production in just a matter of months as evidence that "a society and, indeed, the world can restructure its economy quickly if it is convinced of the need to do so" (p. 29).

In the face of the current ecological crisis, there has been a growing interest in leadership for sustainability as evidenced by the many recent books, symposiums, and executive training programs in the field. Yet as leadership scholar Benjamin Redekop (2011) has observed, "although much has already been written on the general requirements and dimensions of sustainability, much less has been written on the particular processes by which leaders can help make it happen" (p. 244). Due to a lack of strategic sustainability competence, politicians, business leaders, and other decision-makers often engage in reactive measures that, while motivated by good intentions, end up addressing one problem while creating or exacerbating others. As long as measures are not planned and modeled in relation to a robust definition of sustainability, the end result is the further narrowing possibility of viable options for a sustainable future.

In this chapter, we present the Framework for Strategic Sustainable Development (FSSD) as a resource for supporting a paradigm shift from unsustainable to sustainable development (see Ny, MacDonald, Broman, Yamamoto, & Robèrt, 2006; Robèrt, 2002; Robèrt, Broman, & Basile, 2013; Robèrt et al., 2002). We begin by considering how political decision-making often leads to investments that may appear "green" and in the short term have positive benefits for constituents, but due to a lack of systems thinking do not move society toward sustainability over the long term. We use the production of biofuel from corn as an illustrative case of this process. We then present the key dimensions of the FSSD followed by an application of the framework, the ecomunicipality in Whistler, Canada, to illustrate how it has been used to coordinate action among diverse constituents for successful long-term sustainable planning. Central to the FSSD is a robust definition of sustainability and a systematic process for supporting organizations and communities in "backcasting" from an imagined sustainable future based on that definition to allow for strategic planning and rational step-wise action.

Whether one is drawn to use the FSSD in the first place, however, is facilitated by an ecological consciousness (O'Sullivan & Taylor, 2004) and moral imagination (Johnson, 1993) that the framework itself does not provide. We use the reality of climate change denial among conservative politicians and associated think tanks in the United States to reflect on the power of moral identities and cultural frames to limit and enable possibilities for transformational learning and skillful action in relation to the ecological crisis we face. While others have proposed useful strategies for exposing the logical fallacies and other errors of reasoning that inform climate change denial (see, e.g., Diethelm and McKee, 2009), we draw on cognitive science to highlight the need to move beyond the rationalist myth that scientific facts alone can be the basis for motivating cultural change toward sustainability (Lakoff, 2006). Science provides methods for understanding the depth and causes of the ecological crisis, and with that understanding, the conditions that must be met to move organizations, communities, and societies away from unsustainable practices and toward sustainable ones. Yet in the postmodern era, what is accepted as scientific "truth" is contested (see Seidman, 2013). As George Lakoff and Mark Johnson, (1980) have articulated, truth is based on understanding, and what can be understood is fundamentally shaped by cultural metaphors that, consciously and unconsciously, structure experience and guide actions.

When we speak of metaphors or metaphoric understanding in this chapter, we are not simply referring to figures of speech, but to deep cognitive structures that shape how one reasons, what one is able to know as true, and in turn, what one sees as reasonable courses of action. Central to our concern is how metaphors of "freedom" construct understandings of the nature of, and relations among, self, society, and environment (see Lakoff, 2006). For climate change deniers in the United States, freedom is premised upon an atomistic, individualistic, and competitive construction of the human, an absolutist faith in the morality of market forces, and a fundamental opposition toward the state, the United Nations, or any other governing body passing environmental regulations that restrict what is perceived as one's "right" to pursue one's economic interests (McCright & Dunlap, 2010). In our view, such an understanding of freedom reflects a failure of moral imagination grounded in metaphoric thinking that does not truthfully represent the conditions necessary for the survival and flourishing of life on the planet. Garrett

Hardin (1968) pointed to "the tragedy of the commons" decades ago, how in the context of an expanding population, individuals pursuing their own short-term economic interests harms all in the long term. In this way, businesses and communities choosing to use the FSSD framework to guide their activities can be thought of as a form of enlightened self-interest.

Political Decision-Making and the Systems Thinking Iceberg

There are no easy solutions to the current ecological crisis. What is clear is that humanity cannot continue on the path of reacting to problems one by one as if the sustainability challenge were simply a collection of isolated issues that could be fixed one after the other. A prime example of the need for systems thinking is the production of biofuel from corn. In the mid-2000s, corn-based ethanol was presented by then president of the United States, George W. Bush and others in industry and government, as a "solution" to oil dependency with predictions that it would "replace gasoline consumption" (Bush, 2006; CBS News, 2006; The Monitor's View, 2006). Consequently, large sums of public funds were invested in the face of intensive lobbying ($5.7 billion in tax credits in the United States in 2006; The Monitor's View, 2006), and little was said about how to produce ethanol without competing with food production or how to make use of the many ethanol-factories once automobiles are switched, for example, to solar-powered electricity.

The problems with corn-based ethanol are many. While biofuel seemed like a move away from fossil fuel use, a systems perspective shows that "the fossil fuel energy used to grow the corn using modern farming methods offsets most of the energy in the fuel, essentially making corn ethanol into another form of fossil fuel" (Stayton, 2015, p. 153). The use of biofuels produced from other food crops such as sugar cane and soybeans may, under certain conditions, emit even more net carbon than using petroleum fuels (Conca, 2014). From whatever source, biofuels also do not address the fundamental issue of the poor efficiency of heat engines (25−35 percent), which requires burning three to four times more fossil fuel energy than the electricity and motive power energy that is produced (Stayton, 2015, p. 240). Biofuels also do not address the inefficiency of the whole fuel sector

(sourcing, transport, refineries, gas stations), which can be bypassed when electricity becomes the norm energy for the traffic sector. Perhaps most troubling is the moral issue created by corn-based ethanol production — rising food costs in a world where millions are underfed. From 2003 to 2008, for example, there was a 50 percent increase in the cost of U.S. corn following a large expansion of corn-to-ethanol production in 2003–2004 (Petrou & Pappis, 2009). One recent survey suggested that increased biofuel production accounted for 20–40 percent of food price increases in 2007 and 2008, a time when the price of many crops doubled (Stayton, 2015, p. 153). Additional unintended effects of the turn toward fuel crops has been clear-cutting forests, over-pumping aquifers, increased use of chemical fertilizers, and other destructive farming practices (Conca, 2014).

As the example of biofuels illustrates, moving toward a sustainable future requires breaking through the "functional silo syndrome" (Ensor, 1988) and engaging in systems thinking that takes into consideration the short- and long-term ecological and social consequences of potential courses of action and then finds the most strategic and economic routes to get there. Systems thinking in practice builds on collaborative work that avoids the reactive process of blaming others for discrete events, acknowledges interdependencies, and engages in generative dialogue to apprehend deeper causes behind patterns of behavior (Senge, Smith, Kruschwitz, Laur, & Schley, 2010). Crucial to engaging in generative dialogue is having a shared framework for organizing data into pictures that are relevant for decision-making in different organizational and institutional contexts. Without such a framework, debilitating power struggles and decision paralysis are likely, or what Peter Senge (2006) calls "political decision making," referring to "situations where factors other than the intrinsic merits of alternative courses of action weigh in making decisions" (p. 60). The Iowa Renewable Fuels Association, for example, seeks to "educate" political candidates about the benefits of biofuels, enlisting farmers to help "keep the pressure" on candidates eager to win electoral votes in Iowa, the first state to hold U.S. presidential primary elections every four years (Lucht, 2015; Notaras, 2011). The message the group promotes focuses largely on the short-term economic benefits to Iowans of investment in crop fuel production, although materials on their website also claim that biofuels are crucial to solving the country's "dependence on foreign oil" and are "one of the easiest

options to protect student health."[1] The sorrows of the discourse around biofuels are not that all science is lacking; the tailpipes of school buses burning biodiesel do emit less carbon monoxide and other harmful emissions than buses burning petroleum diesel. But a lack of systems thinking allows biofuel investment to be presented as the "green" choice in a binary manner in contrast with the interests of "Big Oil" (Page, 2015), rather than introducing biofuels as a step toward sustainably produced energy for transportation (see Stayton, 2015).

Systems thinking allows us to understand how the most obvious "solutions" to problems, which may seem to have positive consequences in the short term, often reinforce underlying system dynamics that in the long run make those problems more intractable (Meadows, 2008; Senge, 2006). Drawing on the metaphor of a "systems thinking iceberg," Senge and his colleagues (2010) point to the increased leveraging for transformational change that comes from moving beyond surface explanations of discrete events to understand the trends, systemic structures, and cultural assumptions underlying the ecological crisis (p. 174). From this perspective, current efforts to "save" or "protect" the environment are akin to "bailing out the *Titanic* with teaspoons" (Hawkins, 1993, p 5) to the extent that they involve responding to this or that issue without addressing the deeper, interconnected causes of the crisis.

The Framework for Strategic Sustainable Development

The FSSD builds a bridge between science and decision-makers in business, government, and other sectors by offering (a) a robust definition of sustainability that provides a clear objective to head toward and (b) a systematic process for "backcasting" from that imagined future to allow for strategic planning and rational step-wise action and collaboration across organizations and institutions. The FSSD has been developed over a 25-year period through a rigorous scientific consensus process including numerous consultations and iterations amongst top scientists,

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[1]See the various press releases and other promotional materials of the IRFA at http://www.iowarfa.org/index.php

thinkers, and business executives from across the world. This consensus process elaborated four basic socio-ecological principles or boundary conditions for social and ecological sustainability as follows:

In a sustainable society, nature is not subject to systematically increasing

1. concentrations of substances extracted from the earth's crust (such as heavy metals and fossil CO_2 from fuel fumes),
2. concentrations of substances produced by society (such as PCBs and dioxins), or
3. degradation by physical means (such as overharvesting or irrigation causing declining water tables).
   Likewise, in a sustainable society,
4. People's trust is not systematically eroded by structural obstacles to health, influence, competence, impartiality, and meaning-making.

The first three of these principles are derived from the natural sciences, whereas the fourth is grounded in social science and is explored by studying overriding mechanisms for erosion of trust — the glue of the social web (see Missimer, 2015). The intention behind the framework is not to proscribe a particular moral order; whether we want the civilization to go on or not cannot be determined scientifically. But if an *ecological consciousness* that acknowledges humanity's fundamental embeddedness in nested social contexts and natural ecosystems, from which our well-being and life itself are inseparable, leads us to make this choice (see O'Sullivan & Taylor, 2004), we can ask science to tell about the conditions that must be met for this value-based intention to be realized. In this way, science can offer a useful resource for members of organizations, communities, and other social groupings to realize their own intentions to live and work sustainably.

A systematic process to help people jointly apply the above principles has been developed and utilized in many business, corporate, municipal, urban, and academic contexts (see Ny et al., 2006; Robèrt, 2002; Robèrt et al., 2013). This process is referred to in the literature as the ABCD process and includes (A) discussing with participants the *basic principles* of sustainability, and what they imply as boundary conditions for any vision or joint venture they may dream of; (B) assessing current challenges and strengths of one's organization in relation to the desired objective

of sustainability; (C) brainstorming possible *steps and solutions* that would comply with the sustainability objective and its underlying principles; and (D) setting in motion *concrete actions* as part of a step-wise transition plan, where early actions and investments are prioritized to strike a balance between short-term interests (e.g., income) and pace toward the objective. To make the most of any particular tool, its use should be put in the context of the above outlined strategy. This means laying on the table the gap between how an organization looks today and how it will look in a sustainable society, designing the overall strategic plan to bridge that gap, and only then selecting and designing the tools that will be needed (Robèrt et al., 2002). Finally, it is when the basic principles of sustainability are understood that value-based polarities can be inspirational and further creativity and collaboration regarding the design of sustainability goals and the choice of transition paths to move toward such ends.

To illustrate the importance of distinguishing among these steps in the process of strategic sustainable development, consider again the example of biofuel production. Renewable energy is often inaccurately described as a principle of sustainability. Switching to renewable energy may be aligned with sustainability principles and something an organization or society might opt to do. But if done incorrectly, for example, through widespread deforestation by excessive biofuel production (Conca, 2014), or through utilizing corn as biofuel such that food prices increase (Petrou & Pappis, 2009), there would be conflicts with the third and fourth sustainability principles outlined above. What tangibly occurs in practice must not be conflated with the strategies of how to arrive at the objectives. Again, without such systems thinking, we risk trying to solve one problem while creating another.

Whistler, Canada: An Early Role Model for Sustainable Communities

By 2000, the Canadian Resort Municipality of Whistler had made significant progress in committing to sustainable development and had begun building community partnerships, but in 2000, municipal leaders began looking for a clearer way of planning and communicating this new priority with the broader community and, in particular, with local businesses. As with most

communities, there were so many interests, so many diverging wants and needs that it was hard to develop a common approach for sustainability.

The municipality joined with key stakeholders and businesses, and together they learned about the FSSD and applied the framework to engage the broader community and deepen awareness of the challenges and opportunities presented by sustainability. In 2005, the community then developed Whistler 2020 (RMOW, 2005), a long-term community sustainability plan that represented a mid-way point on its vision to become a sustainable community by 2060. Whistler 2020 is not a municipal plan; it is a community-wide sustainability plan, representing a partnership between the municipality and over 60 stakeholders in the community. This plan has won numerous awards, including the Federation of Canadian Municipalities national award for sustainable community planning and the UNEP LivCom award for best long range planning. The Whistler 2020 website (www.whistler2020.ca) also won an innovation award from the Canadian Association of Municipal Administrators.

Whistler developed a vision of success in a sustainable future, framed by the four FSSD sustainability principles. It chose 18 issues to include in its holistic sustainability plan and developed task forces for each issue area, which included affordable housing, energy, water, education, recreation, and transportation. After training in the FSSD, each task force asked themselves the following questions: Where are we today relative to those four sustainability principles? What does success mean for energy, water, etc. in a sustainable society informed by the four principles? What actions could take us toward our description of success in the short-, medium-, and long-term?

Whistler's approach to energy planning exemplifies how a set of principles and a robust decision-making framework can improve how decisions are made for sustainability. Faced with increasing energy needs, extreme pressures on the existing infrastructure, and the need to prepare for the 2010 Olympics, Whistler asked its energy supplier Terasen Gas Inc. to propose a solution. Terasen proposed building a 6-inch high-pressure natural gas pipeline with the ability to supply up to 20,000 GJ/day to Whistler, which would replace its propane system and cost $43 million, amortized over 50 years. At first glance, it seemed like a good investment: Natural gas has less carbon per energy unit than propane, so greenhouse gas emissions would go down. Whistler, nonetheless, turned down the proposal, because

its vision of energy success implied being free of fossil fuels by 2060. Investing in the proposed natural gas pipeline would require increasing usage to make it affordable, putting demands on more investments at the user's side of energy delivery, which, in turn, would tie up capital for inherently unsustainable practices for 50 years. Using the FSSD framework, Whistler realized that the natural gas pipeline, while attractive in the short term, was not a flexible platform for future improvements and ultimately would not lead the municipality toward its vision of success. This breakthrough in thinking led Terasen to propose a smaller natural gas pipeline to serve as an intermediate solution as well as creating a locally owned utility to develop capacity for geothermal district heating, along with other renewable solutions that would meet Whistler's description of energy success. Whistler won the Olympic bid, according to Mayor Ken Melamed, largely because of their clear and sophisticated view on sustainability. Whistler has taken numerous similar actions, including significant achievements in waste reduction, watershed management and land-use planning, green building, affordable housing, and public transportation.

Following Whistler's lead, other communities in North America are using the FSSD to develop community sustainability plans and to engage stakeholders to develop a shared vision of sustainability and a shared way of moving step by step in the right direction.[2] Canadian examples include the District of North Vancouver, the town of Canmore, the towns of Olds, Aidrie, Pincher Creek, Thorhild, Chauvin and Clairesholm, Alberta, the city of Halifax, and the town of Wolfville, NS. In the United States, a number of cities and towns have become "eco-municipalities" that aspire to develop an ecologically, economically, and socially healthy community for the long term, using the FSSD as a guide, and a democratic, highly participative

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[2]Similar developments are taking place in Europe. In Sweden, for example, where the FSSD has its roots, there are currently 100 municipalities and cities gathered in an eco-municipality association (SEKOM), where the FSSD is acknowledged as the overriding and unifying framework for sustainable development. Another example is how the corporation Philips, using the FSSD for sustainable development as well as innovation, has asked the city of Eindhoven to join the network of FSSD-informed cities and municipalities. Eindhoven, where Philips has its head office, is applying the FSSD for cross-sector community building towards sustainability.

development process as the method (see James and Lahti, 2004). These municipalities include the cities of Madison, Ashland, Washburn, Bayfield, Marshfield, LaCrosse, Jefferson County and Johnson Creek, Wisconsin, Vandergrift and Pittsburg, Pennsylvania, Lawrence Township, New Jersey, Portsmouth, New Hampshire, Duluth, Minnesota, and Corvalis, Oregon.

In 2000, the American Planning Association, an independent not-for-profit educational organization in the United States whose mission is to "provide leadership in the planning of vital communities," adopted the four sustainability principles of FSSD as the foundational objectives for their Policy Guide on Planning for Sustainability.[3] While this is a promising development, we notice that among the current eco-municipalities in the United States none is located in southern states raising sociological questions regarding the potential barriers to widespread strategic sustainable development.

Moral Imagination, Climate Change Denial, and the "American Way of Life"

A formidable barrier to sustainable development in the United States has been the concerted effort by industry groups, conservative Republican politicians, and associated "think tanks" to deny the scientific consensus on the human impact on climate change (Dunlap and Jacques, 2013; Freudenburg, Gramling, & Davidson, 2008; McCright & Dunlap, 2003, 2010; Oreskes & Conway, 2010).[4] Such "denialism," or the "employment of rhetorical arguments to give the appearance of legitimate debate where there is none" (Diethelm and McKee, 2009, p. 2; see also Schroyer, 2006), has been motivated largely by the perceived threat climate research poses to the "free market" prerogatives of corporations to pursue profits without regard for environmental impacts. The Heartland Institute, for example, a think tank whose stated mission is "to discover, develop, and promote free-market solutions to social and

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[3]See https://www.planning.org/policy/guides/pdf/sustainability.pdf
[4]Here, we use climate change denial as an example of a barrier to sustainable development, although one should keep in mind that the FSSD view of unsustainability is not limited to human-induced climate change, nor do we take a stance here on whether this or that impact from inherently unsustainable actions is already a fact or will occur only later.

economic problems," seeks to "educate" politicians and the general public that "There is no need to reduce carbon dioxide emissions and no point in attempting to do so," since, as the group claims, "carbon dioxide is [not] a pollutant."[5] On the organization's website is a list of endorsements including 20 politicians, all republicans, including Jim DeMint, U.S. Senator from South Carolina, who praises the organization for promoting free market capitalism, "a priceless, God-given right," in the face of "the socialist agenda threatening America." Another endorser is James Inhofe, Senator from Oklahoma, who claims that "man-made global warming is the greatest hoax ever perpetuated on the American people" (McCright & Dunlap, 2010, p. 122). For Inhofe, it is an article of faith that "man can't change the climate" and that it is "arrogant" to think otherwise. In January 2015, he and other members of the Republican-controlled U.S. Senate voted down a bill acknowledging that climate change is real and significantly affected by human activity (Cockerham, 2015).

Climate change deniers among U.S. political leaders and in the general population more widely are predominately conservative white males (McCright & Dunlap, 2011). Some have ties to the fossil fuels industry, although what drives the reactionary denial and disregard of the boundary conditions for sustainability is not primarily economic interest, but a *self-identity* based on short-term and non-systems thinking. Just as the attacks of 9/11 challenged the "First Worldism" of the United States, "the loss of the prerogative, only and always, to be the one who transgresses the sovereign boundaries of other states, but never to be in the position of having one's own boundaries transgressed" (Butler, 2003, p. 27), so too does climate impact science challenge the ontological security of those with an unreflexive faith in technology, material abundance, unilateralism, and free market capitalism. In both cases, the response has been a reactionary attempt to shore up the certitude and rightness of one's identity and realize a "fantasy of mastery" that with enough force and will power one can create reality as one pleases and without regard for ecological or social boundary conditions (Butler, 2003, p. 18; McCright & Dunlap, 2010, p. 105, 127). Epitomizing this rigid, unreflexive stance is the statement made to the Earth Summit in 1992 by then-president of the United States, George H.W. Bush,

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[5]https://www.heartland.org/policy-documents/global-warming-crisis-over

that "the American way of life is not up for negotiation" (Schroyer, 2009, p. 39).

The concept of *moral imagination* can illuminate what makes the paradigm shift to an ecological consciousness possible for some and seemingly beyond the pale for others who cling ever more strongly to denial and other habitual tendencies of narrow self-protection. Our capacities for reflection, awareness, and moral reasoning are central to our nature as humans, and as cognitive science makes clear, we engage such capacities first and foremost through narrative understanding (Lakoff, 2006). Moral reasoning involves imagining different possibilities in our present situation playing out and choosing among them based on how well they allow us to live out a narrative of a meaningful and significant life (Johnson, 1993). This focus on the narrative dimension of moral reasoning resonates with the work of Ronald Heifetz and his colleagues' (2009, p. 20) view that challenges are 'adaptive' *when they threaten an important part of the story we tell about ourselves*. What is it about the "American way of life" that is so resistant to change in the face of increasingly dire con-sequences global climate change will have for human civilization including massive forced migrations and an increasing number of people killed, made homeless, or otherwise affected by floods, droughts, and other hydrometeorological disasters (see Roberts & Parks, 2007; WHO, 2014)? And most important from the perspective of adaptive change, what cultural resources are precious and worth preserving and extending into the future (see Heifetz, Grashow, & Linsky, 2009, p. 23) as ways of think-ing inherited from the past become increasingly out of sync with new social, economic, and ecological realities (see Scharmer & Kaufer, 2013)?

The American way of life as understood by climate change deniers centers on particular notions of freedom and individual responsibility linked to an absolute faith in the unregulated market as an inherently moral institution (Lakoff, 2006). Freedom from this perspective is constructed negatively as a free-dom from constraint, namely, the constraint of government-imposed environmental regulations that restrict one's "right" to pursue one's economic interests without regard for the impact of one's actions on ecosystems, other species, or others humans, including those yet to be born. Individual responsibility from this perspective is one's obligation to take care of oneself, or at most, one's nuclear family, which one does through seeking one's own economic interest in competition with others. Competition

implies that there are winners and losers, but since unregulated market processes are seen as inherently moral, whether one wins or loses in the market is seen as a moral outcome. For those who hold a faith in the (God-given) rightness of the market, it is difficult to see the impact of one's "freedom" on other humans, other species, or the ecosystems that support life on the planet.

Crucial to overcoming the immunity to change unsustainable ways of living is cultivating the capacity to "see our seeing" (Senge, Scharmer, Jaworski & Flowers, 2004), to "look at" not just "look through" our metaphoric ways of knowing (Kegan & Lahey, 2009, p. 50). As Lakoff (2006) writes, we need a "higher rationality" that does not reduce the "American way of life" and the foundational commitment to "freedom" to a singular political ideology, but instead gives us the "deepest form of freedom — the freedom that comes from knowing your own mind" (p. 15). As he explained,

> If you are unaware of your own deep frames and metaphors, then you are unaware of the basis for your moral and political choices. Moreover, your deep frames and metaphors define the range within which your "free will" operates. You can't will something that is outside your capacity to imagine (pp. 15−16).

Freedom is precious not only to Americans, but to all of humanity, including generations who have not yet been born. As we discuss below, both the modern West and indigenous cultures offer resources for knowing our own minds and for imagining freedom in ways that support human flourishing and planetary well-being.

Discussion and Conclusions

In this chapter, we have stressed the need for systems thinking in the face of the ecological crisis on the planet. The FSSD offers a definition of sustainable development and a decision-making process for addressing the scientifically derived basic and universal challenges of shifting organizations, communities, and societies away from destructive processes of production and consumption toward environmentally sustainable ones. That process involves envisioning how one's organization, community, or society would look in a sustainable future, and then backcasting from that vision to create a path to move toward that vision in the

short-, medium-, and long-term. Yet the paradigm shift from unsustainable to sustainable development is fundamentally an "adaptive" challenge requiring changes in "norms, beliefs, habits, and loyalties" (Heifetz et al., 2009, p. 19). As the reality of climate change denial among political elites in the United States reveals, the value of the FSSD is contingent upon whether those with decision-making authority respect the validity of scientific knowledge, cultivate the capacity to remain open and flexible (rather than closing down and becoming defensive in the face of perceived threats to their self-identities), and commit to refuse to do harm to the social and ecological conditions that sustain life on the planet (see Baugher, 2014; pp. 84−85, Fröding & Osika, 2015, Gelles, 2015).

The scientific facts regarding anthropogenic climate change and other harmful consequences of unsustainable production and consumption do not speak for themselves. Rather, the capacity of individuals and social groupings to see, much less respond skill-fully to, the dire consequences of unsustainable ways of living is shaped by the cognitive frames offered by one's culture, the power of which resides largely in them being taken-for-granted (Lakoff, 2006). A central barrier to sustainable development in the United States is a particular construction of "freedom" premised upon an atomistic, individualistic, and competitive con-struction of the human and an absolutist faith in the morality of market forces (McCright & Dunlap, 2010). Such fundamentalism notwithstanding, we see no inherent contradiction between acknowledging the value of market principles and living into the sustainability principles outlined above, and in fact, many have argued the "business-case" of improving environmental perfor-mance (see, e.g., Finster & Hernke, 2014). From this perspective, and in contrast to the short-term and non-systems thinking view of self-interest, cooperation across value chains and with other sta-keholder groups to arrive at dignified goals for the common good could be described as "enlightened self-interest." Such a focus on the common good may serve an ecological consciousness that allows us to apprehend that the "benefits" to our well-being of healthy, vibrant forests, oceans, air, soil, and the like are more fun-damental than can be expressed by current market principles.

A recent volume on sustainability leadership concluded that "one of the great unsolved questions of the new millennium is really one of the oldest: how to reconcile individual rights and freedoms with the needs and requirements of 'the group' and by extension its shared resources and habitat" (Redekop, 2011,

p. 215). In our view, such oppositions between individual and society, self-interest and the environment, reflect a failure of moral imagination grounded in metaphoric thinking that does not truthfully represent the conditions necessary for human flourishing and planetary well-being. Both the modern West and indigenous cultures offer resources for reconciling self-interest and environmental necessity. Drawing on Buddhist and other indigenous sources, Arne Naess, Joanna Macy, and other deep ecologists conceive of the self as inseparable from the wider environment (e.g., the forests are our lungs, they are just outside of our body), such that environmental protection is no more altruistic than is caring for one's own body (see Wenz, 2001, pp. 222−225; Macy & Johnstone, 2012). Deep ecologists offer an alternative narrative of the self to the modern view of the atomistic individual only responsible to himself. Modern Western liberalism likewise offers resources for ecological thinking, if only we can remember these sources. As political scientist Thomas Spragens (1995) explains, it is anachronistic to reduce the notion of freedom to the right to pursue one's interest in the market, since liberal thinkers prior to the 19th century understood the prerogative to pursue individual economic interest "within the context of a commitment to 'the common good', for which societies are instituted" (p. 44). The individual, as conceived by John Locke, John Stuart Mill, Adam Smith, and other modern liberal thinkers, "enjoyed his or her freedom only within the context of complementary obligations, deriving from communal attachments and obligations, from the restraints of a valid moral order, and from the force of human sympathy" (Spragens, 1995, p. 43).

It is beyond the scope of this chapter to compare and contrast the power of an environmental stewardship ethic versus other frameworks for reconceiving relationships among self, society, and environment (see Larson, 2011; Ostrom, 1990; Schroyer, 2009; Wenz, 2001). What cognitive and social sciences make clear, however, is that cultural frames structure experience and shape how one reasons and attributes meaning to different courses of action. Our freedom to make wise choices, then, depends on our capacity for reflexivity, the ability to see what is implicit in our seeing, and to consider the merits of other ways of seeing. We make two further points in this regard. First, the capacity for reflexivity is not only a meta-cognitive skill, but an emotionally embodied capacity since disruptions in previous ways of looking at the world can produce anxiety and other uncomfortable emotions. A central component of sustainability

leadership, then, involves attuning to the existential dimension of transformative change and the capacity to create contemplative spaces that support people through the painful process of apprehending the disjuncture between "the illusions we live by in contrast to the realities we live in" (see McGrane, 1994, p. 63). Individual contemplative practices may therefore be crucial for sustainability leadership. Recent findings from neuroscience show that it is possible to change both the structure and function of the brain (Ricard, Lutz, & Davidson, 2014; Woollett & Maguire, 2011) and that such changes can be accompanied by increased cognitive flexibility, resilience, self-awareness, compassion toward one self and others, and sensitivity to context (see Fröding & Osika, 2015; Gelles, 2015, Jankowski & Holas, 2014), capacities that may be crucial in developing moral imagination and ecological consciousness.

Second, we would like to turn a reflexive lens back on the foundational metaphor of the FSSD: sustainable development. Some scholars suggest that the metaphor of "development" is suspect because it invokes a productive mode of being that is a central cause of the ecological crisis (see, e.g., Larson, 2011, p. 49). We are sensitive to this concern, yet we distinguish sustainable *development* from the expansion of material outputs. Growth without limits premised on the fear of scarcity is the "the mythical condition under which the modern western way of life was formed" and is now being globalized (Schroyer, 2009, p. 39), whereas all complex systems, including human society within the biosphere, are subject to boundary conditions that place limits on physical growth. In contrast, development focusing on expansion of real value that improves the human condition in terms of health, education, human connectedness and the like is unlimited. This understanding of sustainable development resonates with the post-materialist shift beyond the limited focus on Gross Domestic Product toward qualitative growth of such dimensions as community vitality, democratic engagement, and ecological diversity and resilience (see Samuel G. Wilson, in this volume). We presented the case of the ecomunicipality of Whistler in the chapter precisely to show this qualitative dimension of development as well as to illustrate a practical application of creative, collaborative systems thinking.

We recognize that violations of the sustainability principles outlined in the FSSD are the unintended consequences of the sum of actions and practices from many nested actors of society. Organizations seeking to move toward sustainability using the

FSSD, therefore, cannot only look at their respective internal activities, and whether those violate the sustainability principles. Instead, what is needed in terms of leadership are the analytic skills and capacities to draw conclusions regarding sustainability-related challenges, opportunities, and desirable transition paths within organizations and across value chains and other stakeholder groups. How, for example, could a business truly be sustainable if, by necessity, all of its goods were shipped through current unsustainable means of transportation? As illustrated by the Whistler case, the FSSD is most powerful as a resource for widespread societal change when it serves as a shared mental model for community building among diverse stakeholder groups. Without such a shared framework, individual organizations using the FSSD often find themselves not moving as fast as wanted, sub-optimizing their own pace toward sustainability, because others are sub-optimizing theirs. Among other examples, the Green Charge project in the south of Sweden, likewise, illustrates how the FSSD is being used for multi-stakeholder community building, including not only business but also municipalities, cities, and politicians (see Borén, Nurhadi, & Ny, 2013; Robèrt, Borén, Ny, & Broman, 2015).

The problems of sustainability in the current global capitalist system result from interrelated patterns of unsustainable *production* and *consumption*. One way this reality of interconnectedness is being addressed in industry is in terms of "product service systems" (PSS), a business model that offers a mix of products and services to meet the needs of customers without necessarily selling a tangible product (e.g., providing heat for a building without selling a radiator). Crucial to the eco-efficiency of PSS are innovative interactions among multiple stakeholders that allow greater needs to be met through lower resource utilization (see Vezzoli, Kohtalo & Srinivasan, 2014).[6] PSS were first introduced in industrial settings, although creative applications exist today in relation to retail consumers, such as the Local Food Van Link in Skye, Scotland, through which a van shared by 40 farmers links producers, caterers, retailers, and consumers in delivering organically and sustainably grown food in a sustainable way (Vezzoli et al., 2014, p. 75). As this example illustrates, how a product is transported is interconnected with what that product is and how

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[6]The FSSD lends itself well, as a shared mental model, when PSS is used to arrive at sustainable services (see Thompson, 2012).

it is produced. The Food Van Link is able to work on the island of Skye precisely because the people of the island have a taste for fresh, locally grown, seasonal vegetables. And as the case of food more widely illustrates, the sustainability of any PSS initiative depends on what consumers desire and how much they desire. Such desires are not formed in a vacuum.

Corporations are arguably the most powerful institution in late modern industrial societies such as the United States (Derber, 1998), and much of their power to shape dominate cultural frames is the many billions of dollars spent on advertising (Schor, 2004). This dynamic can be seen in the fast food industry where massive advertising campaigns totaling more than $4.6 billion in 2012, including direct advertising to children (Yale Rudd Center, 2013), create desires for portions of meat and other products with addictive salt-sugar-fat combinations that are harmful to the health of individuals, communities, and the planet. The rhetoric of the food industry suggests that children and other consumers simply need to make wiser choices (see, e.g., Achbar, Abbot, & Bakan, 2003), yet such a surface view of events does not acknowledge the systems thinking iceberg; namely the deeper trends, systemic structures, and cultural assumptions underlying the related ecological and public health crises we face (see Schor, 2004; Senge et al., 2010). The FSSD can be helpful in moving us beyond such an impasse.

As we outlined above and illustrated with the Whistler case, the FSSD does not view development in terms of the expansions of material outputs, but instead as the expansion of real value. Most precious among all human values is health, including the health of individuals and the health of ecosystems that support life on the planet. We have used the reality of climate change denial in the United States to highlight how the shift toward a sustainability mindset requires the capacity to critique dominate cultural frames and the moral imagination and courage to allow unsustainable practices and ways of being, however cherished, to die. One set of such practices is the massive, strategic, and persistent corporate marketing activities that contribute to destructive overconsumption and the creation of "artificial value" through "projecting pleasurable images onto the products they sell" (see Payutto, 2002, p. 77). The industrial production and marketing of sickening foods threatens the health of humanity across the globe with 600 million humans obese in 2014 and with obesity now linked with more deaths per year than being underweight (see WHO, 2015). Most of the excess calories humanity now

consumes compared to a few decades ago come from one, highly government subsidized, source — corn. Systems thinking allows us to see the sorrows of the production of biofuels from corn. The massive consumption of corn syrup is likewise out of sync with the boundary conditions for a healthy humanity and a healthy planet. And it is no irony that the same individualistic notion of freedom and lack of moral imagination which undergirds climate change denial likewise defends direct marketing of sickening products to children. May we develop an enlightened understanding of self-interest and freedom that supports the health and flourishing of all children, including those yet to be born.

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