Two Roads to Green:
A Tale of Bureaucratic versus Distributed Leadership Models of Change

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Over the past decade there has been a trend in the corporate world for companies to transition their environmental policies and practices from a matter of compliance and risk management to a "source of opportunity, innovation and competitive advantage" (Hoffman & Glancy, 2006; Porter & Kramer, 2006, p. 80). Leading companies are redesigning products and manufacturing processes to use resources more wisely, eliminate toxic inputs, and reduce waste by-products. In so doing, they are learning to anticipate regulations and position themselves competitively.

In this study we examine how two well-known corporate entities, "Alpha" and "Beta," initiated and advanced company-wide green initiatives. Alpha is a large multinational company in the business equipment and services industry. Beta is a medium-sized, multinational company that produces a wide range of high-end consumer and industrial products. Both are known for being well managed; both have frequently been recognized as "Great Places to Work;" and both have received numerous awards for innovation.

Yet Alpha and Beta occupy different positions on the continuum of leadership logics that ranges from "command and control" to "cultivate and coordinate" (Malone, 2004). (The two ends of the continuum are summarized in Table 1 as ideal type models.) Alpha is trying to pull away from its traditional bureaucratic roots, with varying degrees of success, while Beta is constantly working to improve on its legacy of distributed leadership. These different leadership logics, each driven by a coherent bundle of core assumptions about leadership authority, role autonomy, and innovation processes, impact the way each company travels the "road to green."

Table 1: Comparison of Organizational Models

Organizational Model	Traditional Bureaucracy	Distributed Leadership
Leadership logic	***Top-down Command and Control***: Role-based "heroic" leadership: Individual, leaders are responsible for major leadership functions and engage in top-down decision making.	***Cultivate and Coordinate***: Leadership functions are performed by many people throughout the organization. Decision making is top-down *and* bottom-up.
Type of leader authority	*Positional authority*: formal leaders issue commands and expect compliance from subordinates; authoritative power is used along with other forms of power.	*Collaborative Influence*: leaders influence others and cultivate their involvement without using authoritative power. (Note this does not imply that power is always used in benign ways)
Role autonomy	*Negotiated autonomy*: individuals have varying degrees of autonomy; must negotiate task and role decisions with superiors. Superiors may or may not take individual interests, skills, and preferences into account.	*Strategic autonomy*: all individuals have significant autonomy to select tasks and roles based on their skills and interests. They are expected and encouraged to choose in ways that serve both themselves and the organization
Innovation model	*Blueprint-Control*: Issue direction after some organizational input; top leaders determine vision, set specific innovation goals, assign tasks, and control timing and process	*Emerge-Synthesize*: Build internal support for shared vision; members propose goals, tasks, and project timing that are gradually formalized; leaders guide, support, and connect emergent efforts

At both companies the Environmental Health and Safety (EH&S) department succeeded in influencing senior leaders to embrace green business opportunities as a strategic priority; at both the resulting projects had access to manpower, funding, and political backing; and at both there was a sense of excitement about what could be achieved.

But despite these similarities, differences in the dominant leadership logics in the two companies led to their green initiatives unfolding in very different ways. Although Alpha had been moving toward more of a cultivate and coordinate logic, bureaucratic rules and a top-down mindset kept high jacking attempts at collaborative influence. What began as a bottom-up green initiative moved quickly to an implementation effort cascading down from the top to successively lower levels within each of its divisions through the company's annual planning and evaluation processes.

At Beta, the challenge was how to cultivate organization-wide excitement in a coordinated fashion without imposing change. Implementation there involved creating space and support for bottom-up green initiatives by individuals and small teams working within the company's business divisions.

At Alpha the shift from a bottom-up to a top-down initiative led relatively quickly to a concentrated effort on a few high-priority projects approved by top managers,

each designed to lead to radical improvements in the company's environmental performance. By contrast, Beta's collaborative leadership led to a slower startup process focused on creating support throughout the organization and a new game board for playing the environmental innovation game—one designed to encourage, channel, and connect small, bottom-up innovations.

The differing positions of Alpha and Beta on the distributed leadership continuum created critical differences in how each company decided to adopt green as a strategic priority, the selection of initiative leaders, and the execution of key leadership functions. In this paper we describe how the two roads to green played out, highlighting how entrenched organizational models and leadership logics shape change trajectories. The results suggest that even when traditional bureaucracies try to move away from a top-down approach, rigid routines and command and control mindsets hamper movement into a looser, more innovative space. As for distributed leadership organizations, the results indicate that sometimes they need to create simple structures and rules so that innovation does not run wild. Finally, in terms of the specific challenge of going green, we highlight some of the danger points in such an effort, and suggest steps to counteract deeply entrenched patterns that can work against success.

Research Design and Relevant Literature

This case study is part of a larger comparative field study of product innovation at Alpha and Beta. It employs an inductive design that allows case differences and similarities to emerge from the data, and draws upon two literature streams, one documenting the broader shift from bureaucratic to new organizational forms, and one identifying key leadership functions.

Bureaucratic versus Distributed Leadership

Recent work on organizational design has documented four trends that make it clear that the old bureaucratic form of organizing —with its clear rules, fixed division of labor and hierarchy of offices — is giving way to a significantly modified organizational form:

- There has been a decline in formalization of job descriptions and task assignments, leading to an attenuation of the distinction between managerial versus non-managerial roles (Kelley, 1990; Powell, 2001; Snell & Dean, 1992; Youndt & Snell, 2004).

- Hierarchies have become flatter as organizations move from "jobs to projects," often self-managed by team members rather than by supervisors (Pettigrew & Massini, 2003; Powell, 2001; Rajan & Wulf, 2006), and from relying on a small number of large, vertically integrated business units toward smaller, semi-autonomous "modular" business units each adapting to distinctive markets (Brown & Eisenhardt, 1997; Schilling & Steensma, 2001).

- There has been a huge expansion in the use of teams. This shift originated in Japanese-inspired quality improvement techniques, and became widespread after the 1990s with the use of cross-functional teams and taskforces (Donnellon & Scully, 1994; Hackman, 2002; Osterman, 1994; Strang & Kim, 2005).

- Internal and external boundaries have become more porous as teams and task forces with overlapping, cross-functional memberships and enterprise-wide collaborative technologies break down the traditional dividing lines of bureaucracy (Gulati, Puranam, & Tushman, 2012).

The organizational context evolving from these four trends is very different from a traditional bureaucracy characterized by centralized strategy formulation, rigid organizational structures, and a command and control leadership logic. With more flexible job descriptions, flattened hierarchies, team-based work, and porous boundaries, newer organizational initiatives rely more on individual agency operating within overarching corporate goals with a cultivate and coordinate leadership logic (Brown & Eisenhardt, 1997; Eisenhardt, Brown, & Neck, 2000).

This new organizational form and way of operating has various names, including "post-bureaucratic" (Heckscher, 1994), the "collaborative community" (Heckscher & Adler, 2006), the "networked organization" (Powell, 2003),"adaptive systems" (Heifetz, Grashow, & Linsky, 2009), the "adhocracy culture" (Cameron & Quinn, 2011), and "collaborative enterprise," (Heckscher, 2007). We employ the term "distributed leadership organizations" a term derived from one of their central characteristics—multiple autonomous agents exerting leadership at many different levels to both instantiate and alter core organizational structures and processes.

Although there is intense interest in distributed leadership organizations, there are few fine-grained empirical field studies aimed at understanding how these forms actually operate. Furthermore, organizations do not simply flip a switch and shift from one form or leadership logic to another. The road from command and control to cultivate and coordinate is fraught with traps, as bureaucratic behavior lodged deep within standard operating procedures and mental models often blocks the way. This chapter aims to expand our understanding of two distributed leadership organizations, one in a period of transition and one firmly established in this space. By tracing how the green initiatives played out at Alpha and Beta we come to understand how change and innovation efforts differ as organizations move away from the traditional bureaucratic structures that dominated organizational life in the 20th century.

Leadership Functions

Our analysis focuses on three aspects of green initiatives at the two companies: the decision to launch the initiative; the choice of initiative leaders; and the execution of key leadership functions. With regard to the last of these, the data is presented

using the Four Capabilities Model, a framework that focuses on four leadership functions: relating, sensemaking, visioning, and inventing (Ancona, Malone, Orlikowski, & Senge, 2007). We chose this organizing framework because it highlights how a more experienced cultivate and coordinate organization operates to engage multiple individuals in the change process and how old command and control processes can reassert themselves through leadership practices, as well as because this model has been shown to help leaders develop new skills in a dynamic world (Ancona, 2011).

Relating refers to the form and nature of relationships among leaders and those they lead. Relating includes perspective taking—being able to see the world through the lens of others—as well as advocating your own point of view, and creating effective networks within and outside of your group (see Reagans & McEvily, 2003; Williams, Parker, & Turner, 2007). The research presented here suggests that as organizations move from command and control to cultivate and coordinate, relating needs to shift from telling people what to do to enrolling them as active change agents and those agents need to develop broad relating within and outside of the organization.

Sensemaking refers to a leader's efforts to understand the context in which she is operating. This involves collecting data and mapping external conditions, including stakeholder needs and expectations, technological advancements, competitive threats, economic conditions, and political shifts (Ancona, 2011; Weick, Sutcliffe, & Obstfeld, 2005). This study suggests that in a cultivate and coordinate leadership organization sensemaking is distributed across multiple individuals on an ongoing basis, as opposed to being the work of a specialized group at a particular moment in time.

Visioning is the ability to paint a picture of the future and frame the overall mission of the organization (House & Howell, 1992). Visionary leaders have been shown to help in the process of transformational change (Bass & Avolio, 1994), and to inspire employees with greater motivation and commitment to the job (Avolio, Zhu, Koh, & Bhatia, 2004). On the other hand, this study illustrates that when top management in a command and control model sees its role as dictating the vision and objectives for change, the result can be to supplant more bottom-up efforts.

Inventing includes the actions taken to make the vision a reality, creating new structures and processes to shift the focus of activity in a new direction (Cameron & Quinn, 2011). Our work suggests that when pushed by a top-down leadership mode, inventing can be quite constrained by set procedures and targets, unlike in a cultivate and coordinate mode where the focus is specifically on creating a context in which others can invent.

The enactment of these leadership practices is highly differentiated across the Alpha and Beta sites, illustrating how such practices are both influenced by, and in turn influence, each organization's models and leadership logics.

Findings

Making the Decision to Go Green

Alpha
Alpha is proud of its history of leadership on environmental issues. In the 1990s, the company made major changes in its internal processes to reduce waste, and worked with the EPA to develop the Energy Star standards. Since the program's inception, Alpha's products have consistently received the highest Energy Star rating. Nevertheless, by 2005 the leaders of the EH&S group believed that Alpha's efforts should expand beyond a focus on Star certification to a broader effort to encourage all divisions to embrace the business case for green.

In 2006 EH&S began a major information collection effort — attending scientific meetings and collecting data from academics, NGOs, investors, regulators, competitors, and customers to identify important environmental issues and possible directions for promising business opportunities. They identified climate change, energy conservation, and waste reduction as major focus areas, prompting Lisa Scanlon, the leader of EH&S, to convince Alpha's corporate leaders to adopt a "green" initiative in 2007 as a major strategic priority.

When a corporate strategic priority is declared at Alpha, unit managers are expected to create relevant project goals, timelines, head counts, and individual assignments. When the green priority was presented during Alpha's annual planning cycle, the head of the research and development (R&D) division, Abby Shore, an avid environmentalist, embraced the new green thrust, and created a cross-level taskforce comprised of scientists and managers from each of the four R&D centers to kick off the division's green initiative.

Beta
Like Alpha, Beta felt it had a good sustainability record and could point to historical collaborations with government regulators to develop environmental standards in several of its target industries. By 2005, however, two long-time employees — Bill Anderson, who led the EH&S group, and John Gomes, an engineer with a long history in new product development — had come to believe that Beta was not fully capitalizing on green business opportunities. Consequently, the two men began working together to lay the groundwork for a new green initiative at the company.

All initiatives at Beta are driven by what the company calls "passionate champions." The company's employees have wide latitude to choose the projects they want to work on and to shape the scope of their work commitments by choosing to build or join small, multi-functional teams. The resulting teams select their own leaders through an emergent, negotiated process. Thus, innovation relies not on appointed leaders, but on individuals who have a vision to create something new, and who can successfully influence others to join them in making that vision a reality.

Because people at Beta have a great deal of freedom to try new things, passionate environmental champions like Anderson and Gomes had been at work for years to advance green initiatives. But the company had no overarching environmental vision, so these local champions were not getting as much traction as they would have liked. As Anderson explained:

> *"We've behaved environmentally responsibly for a long time. But it's been disjointed…if you've got a number of different objectives, and people doing it in their spare time, and if there's not clear and substantial leadership support then it's hard make much progress."*

At the time that Anderson and Gomes were beginning their collaboration, some of the company's most senior leaders were themselves sensing increased interest in environmental issues. Customers, end consumers, younger employees, and even casual visitors were asking Beta about its environmental practices. The senior leadership team realized that the company had no consistent answers for these stakeholders and was not able to "speak with one voice" about its environmental record, as the CEO put it.

Based upon discussions with customers and other CEOs, Beta's CEO joined Anderson and Gomes and their growing group of followers in a far-reaching, internal influencing campaign to make the case for Beta's adoption of an environmental responsibility statement. In 2008 this effort succeeded, and the company adopted the statement as a key strategic priority.

Key Differences.
While both Alpha and Beta arrived at the same decision to prioritize going green, they did so in very different ways. Alpha's top management group was influenced by the EH&S department, but once the company decided to move, the initiative became a top-down push supported and enforced with a focused change process and metrics for success. In contrast, Beta started with two internal champions who created a campaign that gradually pulled the CEO and others into setting a new priority for the firm. Beta's process was more inclusive, organic, and slowly emergent. Alpha's sensing of environmental opportunity came from a small, specialized group, while Beta's was based on a swelling chorus of multiple employees and stakeholders all suggesting new directions and seeking to influence key leaders.

These initial differences set the stage for Alpha's road to green evolving as a top-down initiative run by formal leaders with a narrow focus, while Beta involved more people from varying roles collaborating formally and informally to chart the way forward.

Choosing a leader and relational network differences

Alpha
At Alpha, once the company's environmental strategic "plank" was adopted, responsibility for green innovation shifted away from EH&S. Although the EH&S leader, Scanlon, had a passion for environmental matters, deep expertise around green business opportunities, and significant relational networks that she had developed while developing Alpha's strategic proposal, she played only an advisory role in the implementation phase of the new green strategy.

This decision simply reflected how Alpha's bureaucratic rules came to dominate the structure and decision making around the decision to go green. EH&S—and its leader— were seen as fulfilling a "staff function" that fit into a clearly defined box, with specialized environmental responsibilities. As such, it was considered "too isolated" to lead a company-wide initiative. Once top management adopted the green strategic plank, they relieved EH&S of its early leadership, and gave leadership responsibility to line managers within the company's major divisions. In this paper, we tracked how this process played out in one of these divisions— the research and development division (R&D)—comprised of four centers and some 800 scientists and engineers led by the company's Chief Technology Officer (CTO), Abby Shore.

In 2007 Shore created a taskforce of scientists and managers from each research center and asked her special assistant, a "high potential" leader named Janice Goodhue, to spend part of her time leading the new green effort in the R&D division. Shore felt this would be a "stretch assignment" for Goodhue that would help her develop new management skills and relational networks as she advanced to more senior leadership positions.

Goodhue had a personal interest in sustainability but lacked expertise in green technologies. Also, while Goodhue got assistance from EH&S and used her personal network to identify and quickly form a green team, she had much weaker internal and external networks of individuals interested and knowledgeable about sustainability than either Scanlon or Shore. With the choice of Goodhue as the leader of its green initiative, Alpha selected a high potential leader, but lost much of the technical knowledge and pre-existing relational networks associated with sustainability.

Beta
Meanwhile at Beta, the leadership selection process was handled in a consultative, negotiated manner. Bill Anderson, the head of EH&S, had extended discussions with the company's CEO about leadership of the green initiative. After considering several options, including bringing in an outside person, Anderson, Beta's CEO, and others agreed that Anderson would be the best person for the job. Anderson explained the process as follows:

> *The CEO and I talked about how bringing in an experienced new hire to try to influence an enterprise-wide initiative does not have a good success rate. The*

environmental work just so happened to coincide with something else I'm doing in developing the next generation of leadership in EH&S. I could hand off some of my leadership obligations, which would allow me to take on more of a role in environmental responsibility and sustainability. We talked about it, and it made sense, so I made the commitment to champion this initiative and worked to identify people who would be valuable on a core team.

At Beta, as at Alpha, the EH&S group was focused primarily on regulatory compliance. But Anderson had broader environmental interests and had been pushing for an organization-wide green initiative for some time. In short, he brought passion, expertise, a deep network of relationships, internal credibility, and ready-to-go projects to the initiative:

"*Twelve years ago I led a team that started developing and implementing environmental management systems because of a business need. I've been sensitive to opportunities to move the environmental program forward. 'Stealthing' is recognizing the smaller opportunities that have value. Stealthing sometimes has negative connotations. It's really not negative because you get buy in for these smaller initiatives. You start building programs that can connect in the long term. Part of our strategy was also to integrate into existing programs, such as the quality management system. Customers were saying that they weren't going to buy from us unless these processes were in place…this presented an opportunity to connect previous developed programs and continue to build upon them.*

"*All of these individual pieces were based on local needs and opportunities. When these bigger needs developed you could quickly stitch them together into a more comprehensive model."*

Key Differences

There were striking differences in the individuals chosen to play crucial leadership roles in the green initiatives at Alpha and Beta. Both Goodhue and Anderson were skilled leaders, but they had vastly different resources in three areas: 1) the amount of interest and expertise in environmental issues (Anderson had a great deal; Goodhue had a steep learning curve); 2) a network of relationships that could help advance a green initiative (Anderson had a rich, existing network; Goodhue had to build hers up quickly); and 3) the time they had to devote themselves to the effort (Anderson worked the majority of his time on Beta's green initiative once he off-loaded his other responsibilities; Goodhue was assigned to her initiative only part-time).

The respective selections of Goodhue and Anderson illustrate the two different leadership logics at work. Alpha moved the initiative out of the EH&S "staff" function and into the company's business units. At the R&D division, CTO Shore assigned it to Goodhue, a high potential manager. The rules around "who can lead' were dominated by considerations of where one sits in the hierarchy, role

specialization, and readiness for managerial promotion. In contrast, Beta demonstrated more flexibility to match people and tasks rather than being constrained by rigid job titles and organizational rules. In practice this meant that Beta focused on choosing the person who could make the best leader, with little or no consideration to the staff/line distinction or role specialization.

Sensemaking

Any kind of change process involves external environmental scanning—"what's going on out there?"— and an assessment of internal capabilities—"what can we do in here?" Sensemaking melds data collection from multiple sources, with an ability to "map" the data and discern patterns, and the capacity to test and update the map of the external environment (Ancona, 2011; Weick, Sutcliff, & Obstfeld, 2005).

In both organizations, people in the EH&S departments had done a great deal of sensemaking before the green initiatives became official, building an understanding within the broader organization about the need for "green" and the possible role that such an initiative could play strategically. While Beta opted to have EH&S lead its green initiative, each of Alpha's divisions, including R&D, appointed an internal candidate to lead its effort. These choices carried important consequences for sensemaking.

Alpha
Janice Goodhue, who was appointed by Shore to lead the R&D green initiative, had not been part of the first round of sensemaking led by Alpha's EH&S department. She was therefore coming to the initiative without much sense of the organizational history or existing knowledge base around green. To get up to speed, Goodhue recognized the need to move quickly and initiate broad sensemaking.

> *"I started interviewing senior level R&D managers, because I wanted to understand where they feel green fits in and what they think is important. I talked to VPs or chief technology types because I knew they would have direct contact with customers and I wanted to keep that linkage. I also met with EH&S and the VP there. I wanted to be in line with the Alpha plank for green. They did a lot of research and a lot of background work, so I missed all of that. I came in around the time they were coming up with their conclusions so it was perfect. So I said, ok, tell me what you found out.*

Goodhue then created an exploratory team, anchored by four senior managers representing the four R&D centers. These individuals were assigned by Shore and had varying levels of environmental interest. All were familiar with their center projects and had direct contact with customers. Goodhue then added a handful of team members who were passionate about environmental issues. These included several scientists working on small existing green projects, and two volunteers from EH&S. Except for Goodhue, whose formal work assignment included part of her time for the green effort, all of the other team members were appointed or voluntary.

Their participation was authorized, but "below the line"—not part of formal headcount for the project.

During 2007, this team pursued an extensive outreach effort to solicit green project ideas. Internally, they held open, face-to-face meetings in each of the four research centers; started a green blog; hosted a session at the division's annual research conference; and held a weeklong ideation jam open to several divisions. Goodhue enlisted Shore to help secure funds for a consultant who conducted external market research.

In the end, the team's findings paralleled the earlier findings of EH&S: opportunities lay in either reduction of waste or energy usage. They also discovered that while Alpha's customers were interested in greener technologies and products, they would not pay substantially more for them. In sum, Goodhue initiated an intense sensemaking effort that started from ground zero and included second hand information that others had previously collected.

Beta

At the beginning of its green initiative, Beta already had in place an extensive green sensemaking capacity. This included not only Anderson's EH&S group, but a wide network of people across the company who were actively learning about customers, external expectations, competitive activities, internal capabilities, and technical advances in the environmental area. Anderson had become a key contact point for all these individuals. *"People were calling up and going, hey we're not moving fast enough on this,"* he said.

Over time, Anderson had drawn several conclusions from these sensemaking efforts. He had come to believe that *"…sustainability is a good fit with the culture of being a 'good' organization and with external expectations from consumers. And…customers want us to go beyond [what] the law [requires]."* And then, *"there's the financial side, because most of the issues related to sustainability deal with waste; if you can reduce your waste you can save money as well as have a positive environmental impact. Another consideration is the younger generation, who have expectations of being able to do something in this domain."*

Once Anderson assumed leadership of Beta's environmental initiative, he expanded his informal sensemaking. He pulled together the many perspectives he had been collecting for years from inside and outside of Beta to come up with a more formal map and set of arguments about why "green" was important. Anderson saw Beta's embrace of the environment as a strategic imperative as *"a perfect storm,"* describing the initiative as a *"Venn diagram of passion, skills, and business need."*

Key Differences

Both Alpha and Beta made "going green" a strategic priority by undertaking extensive internal and external sensemaking. In this sense, both leaders practiced cultivate and coordinate by having people from multiple parts of the organization

provide information and suggest possible innovations. At Alpha, however, Goodhue faced a much steeper learning curve than her counterpart at Beta. Ultimately her team's sensemaking effort relearned much of what had already been discovered by Alpha's EH&S group. At Beta, Bill Anderson came to his leadership role with a broad and deep understanding of environmental issues—knowledge that had accumulated gradually with Anderson over a long period of time.

At Alpha, the sensemaking process was more targeted and more formal than at Beta. Goodhue and her team needed information quickly, and launched a variety of efforts to capture that information. However, not everyone thought the process was effective. One person complained, "*It was too big a group and they were doing market studies. Anytime you do market studies you are shooting behind the duck because customers only know what they have. It was a big waste of time."*

At Beta, information about and interest in environmental issues was embedded in pockets of learning and innovation across the company. Anderson and his team built on their existing informal knowledge base to create a more formal map with which to advance a green agenda. Anderson's role as a key person in the sustainability domain meant that his broad network of relationships helped with the mapping effort.

Visioning

Research suggests that visioning is more effective to the extent that it is related to key organizational values, and presents an overarching goal and an image of the future that is a major shift from the status quo (Avolio et al., 2004). Both Alpha and Beta's visioning processes fit these criteria, but took very different forms.

Alpha
At Alpha, the green vision was bounded and specific from the beginning, with top leadership defining success in terms of developing radical new products that would constitute "big wins" in the marketplace. This vision then cascaded down to the divisions via the annual planning process, where the vision was interpreted as a need to move quickly to identify and develop target projects. Goodhue described her mission in these terms: *"OK, my responsibility is to come up with these technologies that we're going to invest in in 2008."* Ultimately, the team Goodhue assembled decided to identify a small number of high-impact projects that would reduce energy usage or lead to significant waste reduction.

Beta
Beta's visioning process proceeded slowly, as do most initiatives at the organization. Leaders seek to influence their colleagues to move in a new direction or make a change at the organization. Anderson's first step in the change process was to gain organizational buy-in for a common vision for environmental responsibility. Over a period of years, he worked to build widespread support for the vision, which Beta eventually rolled out on a global basis. In Anderson's words, the vision was, "*not to*

be used for marketing but as an internal compass to guide decision making and set expectations. We will expect ourselves to live up to these expectations."

Beta tries to cultivate a strategic mindset in all its people—an ability to hold in one's mind the organization's strategic vision and think about how one's efforts can contribute to that vision, leverage the organization's core capabilities, win in the marketplace, and make money, while simultaneously adhering to core values. Anderson leveraged this strategic mindset in the visioning process by *"collecting examples of things that we've done well and communicating, educating, and getting buy-in."* As he proceeded, Anderson sought to understand how the green initiative could simultaneously solve a number of strategic organizational needs, problems, and opportunities.

Anderson also sought to cultivate a strategic mindset in others who were already moving towards a green vision by connecting their efforts, legitimizing their activities, supporting them with new tools and organizational resources, and linking their activities to an emerging meta narrative. His efforts sought to enable both individual freedom and organizational focus, about which he said:

> *"You have to figure out where the boundaries are to guide people and keep them moving in a direction that is consistent with the enterprise objectives while still allowing them the excitement and the freedom to work within those boundaries on the things that they're interested and passionate about."*

Ultimately, Anderson's team identified four broad areas for green innovation: products, processes, new facilities, and facility operation and maintenance. The team's vision was to embed sustainability in how people across the organization sought to create change. Anderson notes:

> "*We want a place where looking at the environmental footprint of products, processes, facilities, and operations is just a normal part of thinking. I'd like to have it be part of the normal thought process in building plants, in developing equipment, and in developing products. It's just the most cost-effective time to do it. It just needs to be part of the way we think."*

Key Differences

While the R & D division at Alpha was trying to move in the direction of cultivate and coordinate, this shift in leadership logic was stymied as top leaders moved relatively quickly to define the core vision for the green initiative—a vision centered on ambitious product goals. With goals defined and temporal targets set, it becomes difficult to create a context in which people further down can collaborate to create their image of a sustainable future. This contrasted with Beta's broad vision, which was grounded in organizational values, and aimed to satisfy multiple stakeholder interests. Anderson worked to build bottom-up momentum around the concept of going green, and invited all interested members of the organization to help define a strategic vision. Anderson built the vision based on his own thinking and by

synthesizing ideas from a broad network. Employees were free to decide whether and how to innovate around the four focus areas of this vision, and were also influenced, supported, and rewarded to move in that direction.

The visioning process at Alpha and Beta illustrates the difficulties of breaking out of a traditional command and control mindset versus operating in a culture where cultivate and coordinate is practiced. In the former, heroic leaders are called upon to quickly figure out how to make the vision come to life through clear product commitments and deliverables, while in the latter organizational members are encouraged to come up with ideas that fit a new strategic direction with coaching from more experienced managers. In the former, the vision quickly becomes narrowly focused and is sent down to lower-level units for implementation, while in the latter the vision is broadly construed and aligned with organizational values, in order to invite widespread experimentation, as discussed next.

Inventing

At Alpha, leaders quickly established specific focus areas after a short period of sensemaking and visioning. Leaders set timelines and goals that would require Alpha to produce revolutionary innovation in a short period of time. By contrast, Beta developed a broad vision and intention, supported existing green initiatives, and celebrated small wins. Timelines and targets were left to develop gradually, as project ideas became clear. In these organizations inventing a way toward the vision involved following their very different routines for implementing change.

Alpha

Goodhue's process for implementing Alpha's vision began with putting together a team of people to staff the project, consisting of leaders high in the organizational hierarchy, and others who were passionate and/or experienced with green projects. Unlike Anderson at Beta, who was already connected with Beta's passionate environmental champions, Goodhue's process for selecting her passionate champions was more serendipitous, "*A guy emailed Abby Moore about his interest around green, and she forwarded it to me and said can you follow up with him. And I said, hey, let's channel this passion into actual research work. So I got him.*"

Although Goodhue collaborated with EH&S on a company-wide effort to build a bottom up community focused on sustainability issues, Goodhue and her team focused primarily on gathering new technology and product ideas that reflected the ambitious vision of Alpha's senior leaders. In short, her task was less about changing mindsets and more about choosing specific areas of focus with prescribed target goals. In discussing the green blog she initiated, for instance, Goodhue said:

> "*I asked researchers to input ideas of what they wanted to see as far as green innovation. We had over a hundred ideas coming out of this, when you combine all four centers. It was quite a lot…. if you could think about being totally green what would you do? What I did from our previous team was give them some*

guidelines—50% less energy. What would you come up with? And how could you make it totally recyclable?"

While this method certainly garnered input from all over the organization, it is not clear that the people who were submitting ideas were knowledgeable enough about customers and green technologies to make informed suggestions. Nonetheless, three project ideas emerged: a reusable version of a previously disposable-only product, a radical new green hardware product, and a software product that would track the cradle-to-grave environmental impact of office technologies/products. These projects were submitted to and approved by the R&D's senior management team, and then funded as strategic priorities.

The three projects were clustered under a single "green program" to be housed in one research center. The head of that center in turn appointed one of his most promising project leaders, Donna Hale, as the green program manager. Although Hale had only "a modicum of interest in sustainability," she was tapped for two reasons: promotion to a program manager role represented a developmental opportunity, and Hale's manager knew that she was extremely effective at recruiting volunteers for her projects. Indeed, Hale achieved the head-count target set by senior management for the green projects with significantly fewer people from the research center than originally anticipated.

As Hale assumed leadership of the green initiative, it was agreed that Goodhue's continued leadership role would be threefold: to support Hale by helping to secure additional resources should they be needed; to continue to serve as the main liaison to the senior management team: and to continue representing the division on EH&S's corporate green advisory board. Goodhue also became more involved in project implementation by providing guidelines for one of the teams that was working on the second of the three projects. As Goodhue described:

"Our team gave them these guidelines, and one thing that they came up with was a technology which will give us the energy reduction we are looking for. It will also give us a way to take something that Alpha previously worked on in a technology, re-invent it in a new way and will give us a big savings in power, which is what the customers are looking for."

Goodhue's guidelines were more about objectives to achieve, which would most likely require significant technology innovations, rather than a new way to think and act, which was more the focus of implementation at Beta. Alpha's approach to implementation was driven by the fact that Goodhue was trying to meet the needs and goals of the new, visible, corporate objective she had been tasked with achieving. According to one team member:

"…[the question was] *how can we go out there and do something that was completely disruptive? We're out for a 10x improvement…Abby* [Alpha's CTO] *said Alpha is going to prioritize and focus on green just like we focus on quality*

and cost and other performance attributes. This is important. We say, OK, where do we think the big hitters are? We go after the big hitters."

As it turned out in this case, however, giving the team a goal requiring them to create a disruptive technology did not achieve the desired results. Under pressure to create radical innovation, the team grabbed for answers, and ended up trying to resurrect a technology that had failed in the 1970s. In one person's words:

"*We were supposed to do something radical. And actually the word radical was giving us trouble because what that meant was people expected something very different. And anything we could think of was not going to fulfill that category. So one of the things that I did was say let's rethink this technology. In the nineteen seventies and eighties it was a big thing in our industry, and there's a lot of Alpha patent. Alpha invented a lot of stuff. There were a bunch of problems [with] it. It was never quite as good [as another technology]. But one part of the technology had changed and the customer standard had changed. So 1—new technology, and 2—lower quality expectations. Like a hybrid car. For some customers if it didn't last so long it's ok if you have better energy usage. So I put together a research presentation."*

Some Alpha team members thought at times that the composition of the team skewed the project selection process. As one team member noted:

"*It was kind of an insular team. These guys were incredibly senior guys. They are all Fellows or Principal scientists who've been here for 30 years….all mechanical people. So what spun off? A mechanical solution. There may have been more value in making a service that you could roll out to a larger community. That's what Alpha does. But (the mechanical solution) turned into something because it was a quick hit."*

The three target projects moved fully into development mode, with mixed results:

1) The reusable product team encountered significant technical barriers to translating the technology into an affordable product. Additional market research revealed that the product would require a type of hardware that Alpha does not make. There was considerable stress within the team as these barriers became clear. Eventually the project manager met with the CTO and CEO to deliver the negative prognosis. Subsequently there was a push to capture all the IP developed, and Alpha began a low-profile search for a partnering company that made more compatible hardware.

2) The team focused on retooling some of its old technology to deliver a radical green hardware product made considerable technological progress, but over time it became clear that incorporating these technologies would require major and expensive changes in the design of Alpha's other products in order to maintain compatibility. Team members were skeptical that they could pull this

off under the time constraints established by Alpha's leadership. "*The business case hasn't been made yet to warrant the type of investment and development that would be needed. I feel a little bit like I'm spinning my wheels and I don't like that feeling. I don't feel like I'm being productive. I guess there's a little anxiety over working on something that probably isn't going to work."* At the end of 2009, the project was discontinued after capturing any new IP with the hope that it might lead to future licensing opportunities.

3) Although the environmental assessment software project required the least resources, it had the most positive outcome. The project team finished a first iteration of the product, and created a web tool that it believed could become part of an energy management service that Alpha could offer to other businesses. Further development, however, would require additional software engineers to develop and a buy in from a business group to get off the ground. Eventually they were able to hand off the tool to a services group that was interested in incorporating the instrument in an ongoing project.

One Alpha engineer suggested that the "big bets" approach may not the right one when dealing with uncertainty, but perhaps Alpha could at least do a better job of learning from failure:

> "*Alpha likes to develop thrusts that have these real long term benefits. Theoretically we shouldn't even be working on it unless we have a big wow. That doesn't always happen but it's our goal. It's very risky to sign up for something because we can't predict squat. We can't predict our market, we can't predict our customers, we can't predict our business, or technology. So we like to pick things that have these big audacious goals. So ok, well, we didn't make it all there but this has some incremental value that the business group can go take. We could compile a platform based just on things we know now while aiming higher."*

In the end, while some incremental innovation did take place, the push from above to make breakthrough innovations put pressure on the implementation teams that resulted in some bad decisions. In the process of reaching for quick innovations, newer ideas were lost, and the team was afraid to speak up about the pitfalls they saw around their chosen innovation path. On the positive side, Alpha did experiment with a number of different solutions to "green", created some new intellectual property, and the company now knows more about what does not work. The hope is that future experiments will have a better yield.

Beta

When Anderson began leading Beta's green initiative, he created a core team of people from across the company who were already engaged and passionate about sustainability. Having worked in this domain for some time, he used his network to staff the team. People also started calling him. *"When word leaked out that I was working on this I started getting phone calls—all kinds of people were interested in ~~this~~ being involved"* Anderson reported.

Anderson saw the purpose of his team as "changing the mindset of the company," and he looked for ways to support teams that were already working on environmental initiatives—serving as a team liaison; highlighting success stories; helping people develop expertise and a strong business case for their ideas; and ensuring that people got compensation rewards for working on such projects.

Beta's emergent style of implementation paralleled its approach to product innovation in general—rapid prototyping and testing to make ideas concrete, followed by collective vetting and pruning to focus on the most promising ideas. As ideas took shape, Beta would then formalize the product development cycle, and develop timelines for deliverables using a modified stage-gate process.

Beta's organizational culture encouraged openness and acceptance of negative information. Cumulative learning from failure tended to be rapid as people engaged in repeated small cycles of experiment-test-fail/succeed-experiment again. Anderson summarized this ethos:

> *"Where people fail is that their "quick win" is too big. It has to start small or you are not going to get a quick win. You need to start building your credibility and also learning because we don't know how to do this right out of the gate. And that's the beauty of it; we're not setting a five-year objective. We've got our vision; let's figure out what the next step is. When we make mistakes we can learn from them and then move forward. You gain credibility, you learn, you expand your network. You take on a project that's bigger, more impactful. If you make a mistake, you have the credibility and people say, I've worked with this guy before, it's not a big deal. With more wins, you get to a point where it becomes part of people's thinking. This is also a way of mitigating risk since you're not going to do something that's going to be high risk."*

Beta was thus characterized by a perpetual state of frothy innovation, with ideas bubbling up continually from all corners of the organization. The company's challenge was finding ways to weed out less-promising projects in order to focus on those that had the most potential. For product innovation, Beta had developed sophisticated organizational routines involving continual formal and informal vetting by leaders and peers to select projects that best fulfilled Beta's product development criteria. Projects were "selected" by identifying them as strategic areas of focus and devoting funding and other organizational resources to them. This happened only after a long process of advocacy by the project champion and collective refinement of the project idea. Anderson explained how Beta thinks about pruning out less-promising product ideas:

> "*What we want to do is really focus people on things that they're passionate about and are the most meaningful things to do…Someone had a [recycling idea]…but if you look at it from a life-cycle analysis it would require a lot of solvents and energy. You end up creating a significant amount of waste solvent.*

Even though there are people who are passionate about the product recycling program, when you looked at it from a business standpoint and from an environmental standpoint it really didn't make sense.

The environmental initiative was too early for a pruning process; there were simply not enough projects yet to compare them against one another. In this phase, Beta encouraged all project ideas for process and facility improvements that had a payback of two years or less. For products, Anderson's team was at the early stage of trying to influence Beta's research and development leaders to integrate environmental criteria into the product development process.

Key Differences

At Alpha and Beta, both organizations swung into action to implement their visions for going green. Both experienced some successes and some failures, and both are continuing on. Alpha made things happen quickly up front, setting big goals and engaging a broad range of people to advance those goals. However, this process created resistance and confusion, and people felt they were slogging along unproductively on the politically hot project of the moment. Nonetheless, this approach did elevate "green" to a higher priority in people's minds, it did create a round of sensemaking that educated a new set of people on sustainability issues from a customer and business standpoint, and it did create new discussions, IP, and learning around how the R&D division might move ahead.

Beta, in contrast, initiated an evolutionary process—stimulating a variety of ideas, developing and connecting them, seeking to retain only good ideas, and then institutionalizing the development process. The process is naturally slow and builds gradually over time. To date no breakthrough innovations have resulted. Nonetheless, there is now an organization-wide commitment to being more "green," numerous projects have emerged in line with this new commitment, and a set of tools, examples, coaches, and resources are now available to help people succeed in green projects.

Figures 1 and 2 present some of the major differences in how the four key leadership functions of relating, sensemaking, visioning and inventing were executed at Alpha and Beta.

Figure 1: Alpha's green initiative

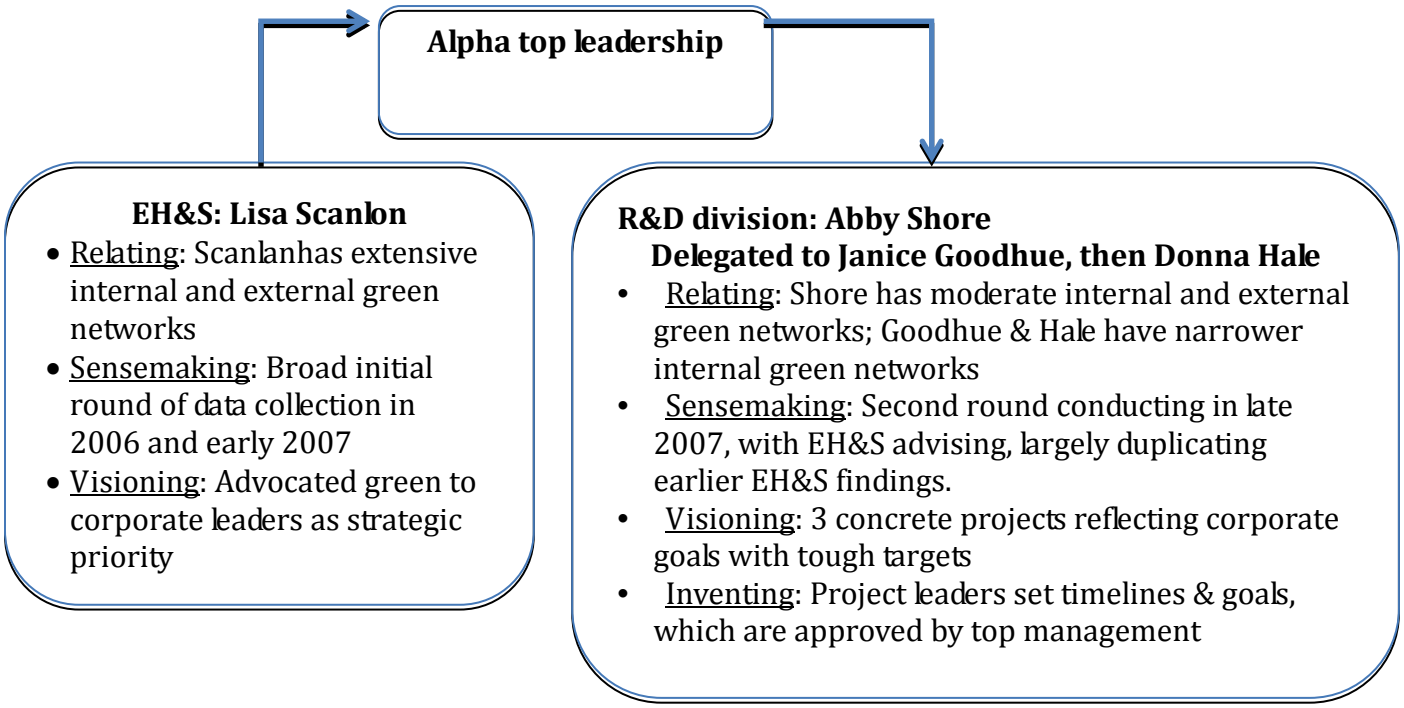
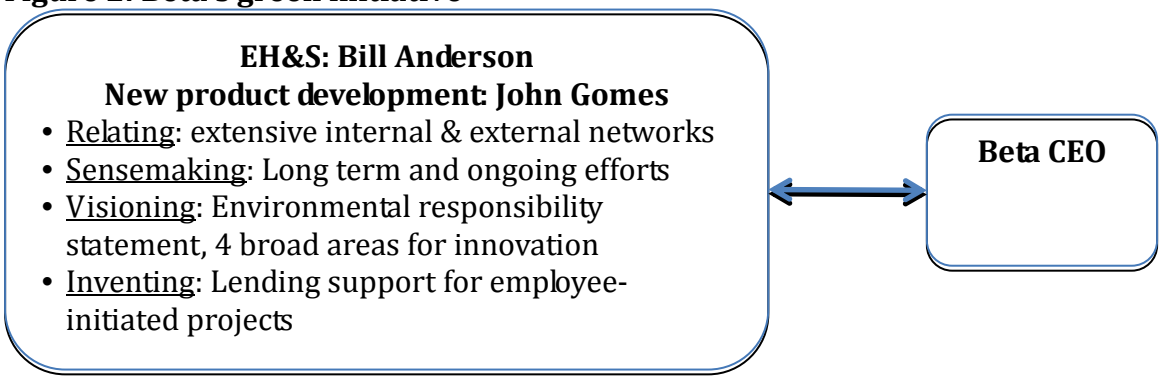


Figure 2: Beta's green initiative



Summary

After a brief period of sensemaking, the R&D division at Alpha created a macro, top-down focus on three "stretch" projects, inviting people to flesh out the micro details. Beta instead developed a broad vision over a number of years and then looked to the many micro efforts and ideas that could eventually be synthesized into a macro strategy and focus. Compared to Alpha, Beta's process was more on-going as part of daily work, more experimental and tentative, and tended to produce smaller-scale innovations that could be rapidly killed or fixed.

The role of leadership at Alpha was to create a specific blueprint for change and control the process by setting tough deadlines, while at Beta leaders established guidelines for an emergent process and then supported and fused what grew as a result.

These different trajectories toward green evolved in ways that reflected the historic organizational models from which they emerged. Alpha made strides in the direction of a cultivate and coordinate leadership logic, but consistently got pulled back into the bureaucratic, command and control mode while Beta enacted more of a distributed leadership model. Each leadership logic was instantiated in the way that people decided to go green, why and how they selected certain leaders, and in the way that relating, sensemaking, visioning, and inventing took place.

The command and control logic has power and authority to move initiatives from top to bottom, with individuals assigned to tasks in keeping with their role in the organization. People often take on stretch roles to make an impression on top management and to move up the management ladder. As project goals come down from above, the people who must meet those goals sometimes see them as separated from the technologies, customer needs, and interdependencies that one needs to understand project success. Nonetheless, employees carry on with their assigned tasks, resurrecting what they can from failing or modestly successful projects in order to succeed in a performance culture.

The cultivate and coordinate logic is slow to start, as those with new ideas try to negotiate their own roles and garner interest on the part of others. The relating function of leadership is critical in this organizational model, as many people must be consulted for key sensemaking, visioning, and inventing efforts. Because people have high role autonomy and cannot be assigned to tasks or ordered to perform, they must be influenced to adopt new ideas and ways of working. In turn, their ideas become part of the strategy. The ideas that emerge must be supported or dropped, tested, and if successful woven together with other emergent ideas to create a coherent set of strategic offerings.

In sum, the road to green is different based on where you are on the continuum from command and control to cultivate and coordinate. The dominant logic shows up in the ongoing processes and structures of organizations, as well as in the very mindsets of people that influence day-to-day decisions. Even organizations trying to shed their command and control mentality may be pulled back into a bureaucratic mode as formal leaders configure human resources within a constrained set of roles and responsibilities. Innovation then takes place within a tightly constrained vision that propels innovation forward but, in this case, appears to have limited the creativity brought to bear on the task. When organizations are closer to the cultivate and coordinate logic, formal and informal leaders collaborate to create an environment that enables small experiments, celebrates small wins, and winnows out bad ideas. However, this process is slow, and it can be frustrating to try to influence so many people and guide them in one direction.

From an academic perspective several key points emerge. First, future analyses need to combine a leadership and organizational lens to enable a broad understanding of how to implement change in a dynamic, complex environment. Second, making change in only one part of this interdependent system will not be enough to create lasting change; the system as a whole and its interdependent effects must be considered. For example, simply choosing a different leader will not shift the innovation pattern unless organizational norms are also changed. Third, organizations that are historically coming from a command and control logic can be hampered by a reliance on career managers rather than idea champions, innovation on demand under tight time constraints, a reliance on big wins, and a performance rather than a learning culture. Fourth, several micro-processes end up being critical to organizational change in a distributed system: emergent leadership, a widely shared strategic mindset, iterative learning, and the compilation of distributed sensemaking. We hope that future research can further explore these ideas.

Managerial Implications: As firms move strategically to embrace sustainability, their leaders embark on a difficult path of change. Many are trying to shed their command and control mode of operating and innovate through cultivate and coordinate. While this is an aspiration for many, the pathway to change in this new mode is not always clear. Here we have tried to capture the micro-processes of leadership across different stages of the change process, comparing firms at different points on this continuum. Furthermore, firms coming from a bureaucratic

lineage may be high jacked by deeply embedded modes of change that frustrate the desire to operate in a more distributed mode. Based on our findings we offer ten key elements to creating change using a cultivate and coordinate leadership logic. We hope that managers moving toward this mode of operating can use this as a kind of checklist for change.

Creating Change with a Cultivate and Coordinate Logic

1. When people at lower levels of the firm have ideas on new strategic objectives that have been vetted and tested, let those people have a role in the change process. Change does not always have to be completely top down. This new mode of operating requires senior management that is open to ideas from below, a capacity for employees to be entrepreneurial, and the ability of managers to synthesize bottom-up efforts into a higher-level focus.
2. When assigning people to roles, consider who has the passion, knowledge, networks, and time availability to succeed—independent of that person's position in the hierarchy and organizational role. If this is not politically possible, then think about creating dyads or teams that include the necessary expertise to lead the initiative.
3. If sensemaking has been done and deep knowledge exists within, or outside, the organization, suggest that people engage in "vicarious learning" (Bresman, 2010) from others so they can build on, instead of duplicate, existing knowledge. Also, since the move to sustainability is complex, sensemaking should be distributed with information coming from multiple functions, divisions, and levels continuously over time.
4. If you are implementing electronic brainstorming or voting or other processes to pull on the collective intelligence of multiple employees, make sure that those participating actually have the expertise required, and that the input gathered fits the task at hand.. People need to understand the problem they are trying to solve, the key goals to be met, and the technological and financial constraints in order to weigh in effectively on product ideas and invent new ways to move forward.
5. Before assigning stretch goals and objectives, have an honest conversation with team members about their capacity to implement. Create a safe atmosphere so that progress reports and other communications are open and honest. Make sure that people understand the overarching vision that is driving the project rather than just communicating targets and goals. Have people weigh in with their own ideas for goals and objectives.
6. Provide coaching and learning opportunities so that people can practice the decision making, entrepreneurial activity, and negotiating needed to work in this mode of operating.

7. Provide opportunities for employees to meet one another and network across the firm. The shift from a command and control to a cultivate and coordinate logic requires high levels of trust and connectivity to enable effective collaboration for distributed sensemaking, inventing, and visioning.
8. Remember that moving away from a command and control mode of operating does not mean that senior leaders cease to play a role in the change process, nor that chaos rules. Leaders create the environment and guidelines that enable others to step up and innovate.
9. Don't assume that employees in a cultivate and coordinate system will revolt at the idea of a top-down decision, if for example, there is a need to move quickly due to a clear and short window of opportunity or to weed out unproductive projects. Even though contrary to cultivate and coordinate norms, if leaders make their decisions transparent, get input, and share their sensemaking and reasoning, then top-down decision making can be successful on occasion. In fact, employees may be frustrated by the slowness of the decision-making process and welcome some quick action if the rationale is clear.
10. Achieving change in the area of sustainability will require some combination of command and control and cultivate and coordinate. It will, by necessity, involve many organizational players that exist across the bureaucratic—distributed leadership continuum, including government agencies, universities, NGOs, companies, and dedicated teams. It will demand leaders who can both engage in top-down decision making to make shifts in environmental and energy policies and practices, as well as in creating the structures, opportunities, and guidelines to compel and enable others to innovate and act within this space.

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