LEADERSHIP IN A COMPLEX ADAPTIVE SYSTEM: INSIGHTS FROM POSITIVE DEVIANCE

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Selected as Best Division Paper 2012
Academy of Management
Organization Development and Change Division

Selected as a Best Paper 2012
Academy of Management

Citation: Academy of Management Best Paper Proceedings, 2012
INTRODUCTION

What is organizational leadership, and how can it facilitate accomplishment of desirable outcomes? These questions have spurred much research, generating theories that reflect the conventional wisdom of their time. More recently there has been new thinking about leadership, including that it can be informal, distributed, and viewed as a process that emerges and reflects the tenets of complexity science (Goldstein, 1994; Stacey, 2007; Uhl-Bien, Marion, & McKelvey, 2007). Our knowledge of complexity science and leadership suggests that while this literature is of benefit, the next requisite step is investigation of how the process of leadership, and the many tensions leaders must negotiate, unfolds to influence self-organization toward beneficial outcomes.

Our case study from Maine Medical Center on the Positive Deviance change process sheds light on leadership in a complex organizational context. Based on the study, we come to define leadership as the emerging understanding and evolving process of thoughts and actions across individuals, which can influence self-organization toward desirable outcomes.

COMPLEXITY SCIENCE AND LEADERSHIP

Advances in complexity science are deepening our understanding of dynamics in systems (Holland, 1998; Kauffman, 1995; Lorenz, 1993; Prigogine, 1996). A paradigm shift began to emerge in the 20th century based on the inability of the traditional Newtonian science to explain the chaotic nature of phenomena (Tetenbaum, 1998). We learned that complex dynamic systems have several properties that defy traditional science as they tend to be path dependent and sensitive to their initial conditions; may react disproportionately to internal or environmental perturbations (Lorenz, 1993); exhibit a tendency toward emergence or internally-induced change (Mathews, White, & Long, 1999; Morel & Ramanuman, 1999); and do not have equal capacity to adapt and evolve.

Questions have emerged regarding the relevance of complexity theory to the social realm; specifically, what is the role of organizational leadership, and indeed does organizational leadership have a role, in the process of self-organization in complex adaptive systems (i.e., the sub-set of systems whose members or agents have the ability to change their behavior and adapt). Some find that complexity-based leadership lacks substantive research (Avolio, Walumbwa, & Weber, 2009); others have marginalized it as being a new contingency theory (Fry & Kriger, 2009). Our case study helps to overcome these criticisms, by illustrating the human dynamics associated with change in human systems as well as the complexity concepts of non-linearity, self-organization and emergence.

POSITIVE DEVIANCE AND ITS INFLUENCE IN HEALTHCARE

Positive Deviance (PD) is rooted in the sociological concept of human agency. Despite members of a society being constrained by social structure, there is also a tendency for some members to engage in nonconformist behaviors (Stones, 2009). PD has been used to mobilize organizations and communities around such intractable problems as childhood
malnutrition and HIV/AIDS (Mackintosh, Marsh, & Schroeder, 2002; Marsh et al., 2004; Pascale & Sternin, 2005). It is based on the observation that in most communities there are individuals and groups whose uncommon practices produce better outcomes than their peers. The PD approach focuses on discovering and disseminating these practices. These points come to life in the quintessential PD story. Jerry and Monique Sternin went to Vietnam in 1990, to help fight childhood malnutrition. The Sternins found that while the norm in the villages was to feed children rice twice each day, some families with healthy children fed their children three or four times a day and added fresh water shrimp, crabs and sweet potato greens to the traditional rice diet. Equipped with these discoveries, the villagers designed a program to practice the desirable, deviant behaviors, as the Sternins realized that teaching alone would not lead to desired behavioral change. Dramatic and sustained improvement in childhood nutrition resulted (Mackintosh et al., 2002).

The use of PD is linked to the growing interest in complexity science in healthcare. In a landmark study, the Institute of Medicine (2001) recognized healthcare systems as complex adaptive systems and adopted a complexity framework for improvement. Positive Deviance portends a radically unconventional orientation for healthcare administrators and clinicians; they must learn to appreciate that organizational processes are characterized by uncertainty (Stacey & Griffin, 2005), i.e., it is OK not to know how best to proceed. The process is grounded on several beliefs: the wisdom needed for change exists in the organization; change efforts are best led from within the institution by people with firsthand knowledge of its work, history and norms (Pascale & Sternin, 2005); and expertise within an organization is widely distributed. A notable example of the application of PD in the US has been on efforts by hospitals to reduce infections from methicillin-resistant Staphylococcus aureus (MRSA). Relatively simple tactics including hand washing, use of gowns and gloves and surface cleaning help prevent MSRA transmissions and infections (Forsha & Richmond, 2007). Yet, policy edicts regarding infection practices do not recognize that changing human habits is very difficult and engaging staff in sustained improvement is a significant challenge (Welsh, Flanagan, Kiess, Hoke, & Doebbeling, 2011).

Administrators and medical professionals who used PD recognized that changing long-standing patterns of healthcare professional behavior and confronting a virulent, adaptable, and readily transmittable bacteria were complex challenges (McKenna, 2010; Welsh et al., 2011). Drawing upon insights from complexity science, they appreciated that MRSA transmission and infection rates, as well as the patterns of infection prevention practices of hospital staff, are generated by self-organizing processes. While understanding that self-organization cannot be controlled, the PD movement assumes, and its success suggests, that PD affects the parameters shaping self-organization in human systems: namely, the flow of new information; the number and quality of connections; the degree of diversity in perspectives; and power differentials (Anderson & McDaniel, 2008; Stacey, 1996; 2007).

**METHODS**

The site of the study is Maine Medical Center (MMC), a non-profit, private corporation that serves as a community hospital in Portland, ME, and a tertiary care center for northern New England. PD implementation, targeted at MRSA prevention, began in mid-
2009 with identification of three pilot nursing units; orientation for leaders and staff from the pilot units and associated departments; and training in Discovery and Action Dialogues (DADs) (Lindberg, 2009). These dialogues were used to surface positive deviant behaviors and barriers to their wide-spread application, generate new PD practices, engage an ever-wider group in the initiative, and spur action. The PD implementation led to formation of the MRSA Collaborative - the group of staff volunteers who guided the effort. In late 2010 three new nursing units joined the Collaborative and a decision was made to integrate PD into a major new hospital-wide drive to reduce transmission of all antibiotic resistant bacteria.

The co-authors represent an integrated approach to “inquiry from the inside” and “inquiry for the outside” as has been suggested will benefit organization studies (Bartunek & Louis, 1996; Evered & Louis, 1981). The first author was involved with the MSRA Collaborative from its inception; yet his extensive experience in healthcare allowed him a level of “outsider” perspective. The second author is a management faculty member whose research includes leadership and complexity science. The co-authors illustrate the skill-set needed for qualitative research (Cassell, 2009): we engaged in reflection as well as reflexivity, and had the practical wisdom or “phronesis” to be pragmatic.

The discussion sessions held at MMC in August, 2010 were led by the authors and were viewed as conversational learning in which participants constructed meaning from their experiences (Baker, Jensen, & Kolb, 2005). The eight discussion sessions involving a total of 24 MMC employees were recorded, and notes were taken while they progressed. Non-recorded conversations occurred during meals and breaks.

THE MSRA COLLABORATIVE AND LEADERSHIP: EMERGENT THEMES

We elaborate insights related to two themes – anxiety, attachment, and relationships; and power shifts – that emerged from the discussion sessions and our reflections.

Anxiety, Attachment, and Relationships

Becoming involved in a new change process was initially anxiety-producing for many members of the MRSA Collaborative.

- A Physician Leader: “I came to it with the same skepticism others did…Different from change and leadership I experienced, was trained in…Doctors write orders when they want something done.”
- A Patient Transporter: “Intimidation and fear. This was all new to me. It’s one reason I’ve stayed as a patient transporter.”
- A Nursing Manager: “I…was uncomfortable at first. I’m not a person comfortable with not knowing.”

Almost all participants spoke in some way about the importance of a relationship with one or two members of the MRSA Collaborative or of membership in the group as being vital to their participation. “Who related to whom” went well beyond what would be considered typical in hospitals; for example, a patient transporter and physical therapist worked with a senior nursing leader. These relationships made it possible for members of the
group to deal with the anxiety of a new, untested process and the emergent nature of the PD process; and confront colleagues and more powerful healthcare professionals when their infection prevention practices were unsafe. The significance of these relationships and the importance of being included as a member of a group were recognized in an occupational therapist’s comment about Cheryl, the senior nursing leader involved in the effort. “Cheryl has worked particularly hard to make us feel involved, as partners at the table.” A nursing unit helper said about her relationship with a clinical nurse leader, “We’ve been a team since Barb joined. It’s brought us closer together.” A nurse observed, “It was awesome. I wouldn’t have worked with so many people. Now it’s the culture for us.” One front line member said “I come to these meetings and feel charged up. I go out and feel I have to do something.” Another member, in response to a question about where he found expert help replied, “The group as a whole. Knowing I can come back to the team and not just face it on my own.”

One of the strong relationships to emerge in this effort was between a young physical therapist and an experienced occupational therapist. Their actions proved to be a turning point in the initiative – demonstrating to MRSA Collaborative members that organizational change can be stimulated from the front line. Janice, the physical therapist, and Cathy, the occupational therapist, together conducted multiple DAD sessions with 70 colleagues in the Rehabilitation Department. A strong, repeated concern raised was the impossibility of adhering to MMC’s policy on gowning, gloving, and hand washing when ambulating a patient with an infection outside their room. Janice said: “Policy requires we take our hands off patients; we can’t do this safely. Face dilemma; face safe patient handling or following policy. When observed, we were called on it. It’s a policy, can’t change it. This is what happened for several years. Most of us blatantly ignored the policy, but didn’t like this.”

Fruitless efforts had been made over the years to have the policy modified. Janice feared that outing the policy violation would hurt her reputation and career. “Oh my word. I’m going to tell…everyone above me that we don’t follow your policy.” She did raise the issue in a direct manner at one of the Collaborative meetings. During this meeting, members of the Collaborative commended her for her courage and told her later, “You’re not gonna go anywhere with this, it’s how it is.” Janice and Cathy then reached out to a “sympathetic” infection control person who was willing to come to the floor and witness the challenge of complying with the existing policy. His response was, “I get it; this is impossible to follow.” They then worked together to modify the policy; it permitted Rehabilitation staff to decide if they could put on a new gown and gloves without risking the safety of their patient. Janice said, “(We had)…. a great outcome. The policy was changed in record fast time.”

Members of the Collaborative observed this change demonstrated what was possible. The voice of front line staff was heard and resolved a long-standing problem. It inspired others to share their concerns openly and talk about what was really happening with infection control efforts. In complexity terms, this story is an example of non-linearity: a small action having big impact, and Stacey’s observation (2007) that population-wide patterns emerge from local, everyday interactions.

In their research on attachment and separation, Smith and Stevens (2002) explore the physiologic benefits associated with attachment behavior that develops between mothers and
infants, a dynamic process they claim stays with us as we mature. The comfort and calmness associated with attachment and the knowledge that it is available through attachment paradoxically enables infants to take risks (crawl further away from mom and experience feelings of separation and anxiety) and enables adults to challenge established norms (which also trigger feelings of separation, isolation and distress). It is reasonable to say that the ability of Janice and Cathy to challenge policy was supported by the connection and attachment they felt with each other and other members of the MRSA Collaborative.

As there is paradox in the attachment and separation dynamic, so too there is paradox surrounding the formation of strong relationships among members of the MRSA Collaborative. The very creation of a tightly connected group leads automatically to exclusion of others, as Elias and Scotson (1994) wrote. A member observed, “When we become the only face of MRSA, we become set apart. You may notice that Janice and I don’t wear the MRSA Collaborative buttons (that some other Collaborative members wear).” Because members appreciated the significance and limitations of strong group relationships, they played with the concept of “staying small and getting bigger”. They explored how to foster small, close-knot groups devoted to infection prevention while engaging many more people and nursing units.

**Power Shifts and the Emergence of Leadership**

We found that shifting power relationships did occur, and enabled the broad engagement of staff and open, free-flowing patterns of interaction in the MRSA Collaborative. A larger and more diverse group of employees came to play leadership roles in infection prevention. The two senior leaders of the MRSA Collaborative extended invitations to interested staff to join the effort and offered to share their power and responsibility with others. An occupational therapist observed, “It’s been so egalitarian.” Another Collaborative member said, “Management welcomed me with open arms. It made me feel like I am important.” This process demonstrates that power arises through a relationship, co-created by those in the relationship (Crozier, 1973) and illustrates the view of power advocated by Elias and Stacey, in which shifts in power are associated with novelty (Elias, 1998; Stacy, 2007).

Not surprisingly, this shift of power was met with attempts by some to assert their positional power. One former member of the Collaborative who is a manager at MMC, instead of seeking to understand issues raised by front line workers, emphasized her expertise by citing the latest evidence and insisted on compliance with existing hospital policies. Several members of the Collaborative told Cheryl they would leave the group if the condescending behavior continued. Cheryl realized the seriousness of this. “We’re going down, the most important people are leaving us.” She acted quickly and asserted her own positional power, arranging for the replacement of this manager on the Collaborative.

The development of the revised infection prevention policy and many small individual acts of Collaborative members (like reminding “powerful” physicians to gown, glove and wash their hands before entering isolation precaution rooms) suggest that shifts in power are related to change and emergence of new patterns of interactions. And because the
results of these shifts depend on how others react, leadership emerges from the interactions themselves. This viewpoint is in line with Mead’s (1934) notion of gesture and response, where meaning stems from an interactive, iterative process. Both change and the emergence of new patterns are a result of self-organizing processes. The contributions to leadership and change made by many of the Collaborative members can also be understood through Heifitz’s adaptive leadership model. “People have long confused the notion of leadership with authority, power and influence. We find it extremely useful to see leadership as a practice, an activity that some people do some of the time” (Heifitz, Grashow, & Linsky, 2009: 24). A front line worker in the Collaborative observed. “I am a unit helper on Gibson (her unit), so I am not a leader or manager (there). But going into the MRSA Collaborative I am a leader… Being….in the MRSA Collaborative has given me the power, I guess.”

Yet, it is critical to note the context and limitations of the unit helper’s power and the role of organizational elites – the board, executives, and doctors – in allowing others to feel powerful and feel that their power is legitimate. Those in positions of power increasingly recognize the ability of other employees to make decisions; these employees accept the responsibility, but they also accept there are limits to their empowerment (Courpasson & Dany, 2003). The decision to utilize PD in MRSA prevention efforts, allocate resources, and provide some of the emotional and social support needed to engage successfully in the PD initiative were provided by executives and the board. More fundamentally, executives (with board consent) were the ones who blessed the desired outcomes that self-organization should work towards; namely improved infection prevention practices and reduced MRSA infections. We found that non-managerial employees now have a louder and stronger voice and that management does listen to their voice. All have voice, but all voices are not equal.

CONCLUSION

The examination of complexity science in the organizational domain has led to new understandings about leadership. Accordingly, leadership is an indirect, catalytic process (Schneider & Somers, 2006) that facilitates productive self-organization, a movement in which activities are reformulated around a common cause (Uhl-Bien et al., 2007). We hope our case study of the MRSA Collaborative at Maine Medical Center helps illuminate the human and social aspects of organizational leadership in a complex adaptive system. We also hope our analysis of the case elevates complexity science’s application to leadership from Fry and Kriger’s (2009: 1677) categorization as a contingency theory to their category of “conscious leadership”, in which leadership is based on being aware of self in relation to others. By having the opportunity to observe the process at MMC, we witnessed how leadership emerges within a maze of emotions, obstacles, paradoxes, power plays, and other challenges. Those engaged in leadership – from senior executives to front line staff – grew in their awareness of self and others and in the complex issues associated with change. The vice president of nursing, to whom Cheryl reported, stated she had never seen such rapid development of people. We also witnessed a decrease in MRSA rates, and a culture of wider staff engagement. Together these advances inspired a significant medical center wide drive to eliminate transmission of all antibiotic resistant bacteria.
Our study leads to a fuller understanding of the human and leadership dimensions of the PD process. Yet, we are also mindful of limitations regarding insights drawn from the case, which reflect the uniqueness of organizations due in part to their path dependency and the idiosyncratic aspects of the process of emergence. Still, the collaborative effort of a diverse set of employees combating an adversary in a complex organizational setting offers persuasive evidence regarding what constitutes leadership, and how it can be practiced.

REFERENCES AVAILABLE FROM THE AUTHORAS