Complex Adaptive Schools: Educational Leadership and School Change

BRAD KERSHNER AND PATRICK MCQUILLAN

Boston College (USA)

This paper utilizes the theoretical framework of complexity theory to compare and contrast leadership and educational change in two urban schools. Drawing on the notion of a complex adaptive system—an interdependent network of interacting elements that learns and evolves in adapting to an ever-shifting context—our case studies seek to reveal the complexities, tensions, characteristics, and related implications for school leadership derived from using this heuristic to understand adaptive change. In particular, we highlight the need to disrupt the status quo as a precursor to adaptive change, the power generated by distributing authority through decentralized networks, the importance of relational trust, and the impact of school culture.

Every day, urban schools in the U.S. struggle to overcome challenges generated by their longstanding socioeconomic segregation (The Equity and Excellence Commission, 2013). The impact of these inequities are readily apparent: the enduring achievement gap (Rothstein, 2004); a nationwide dropout rate, concentrated in cities, that exceeds one million students annually (Hemmings, 2012); and turnover rates among urban teachers, principals, and superintendents which preclude many schools and school systems from generating any sense of community or consistent student achievement (Hargreaves & Fink, 2006). Further, efforts at reforming urban schools have proven notably ineffective. While rampant student failure suggests a badly failed "system," reforms typically focus on symptoms of systemic failure not underlying causes (Evans, 1996; Hess, 1999). The title of Charles Payne's (2008) recent book says a great deal: *So Much Reform, So Little Change*.

Yet studies show that urban school leaders can positively impact their schools; indeed, they may represent the single most compelling leverage point for creating a more equitable

educational system in the complex context of urban schooling (Branch, Hanushek & Rivkin, 2013; Elmore, 2000; Hallinger, 2011). As the Wallace Foundation (2011) reported, studies of educational change consistently acknowledge "the empirical link between school leadership and improved student achievement" (p. 3; Fullan, 2007). A review of research on school leadership substantiated much the same: "[L]eadership is only second to teaching among school-related factors in its impact on student learning and . . . [the] effects of leadership account for about a quarter of a school's total effectiveness" (Leithwood, Louis, Anderson & Wahlstrom, 2004, p. 5). The Equity and Excellence Commission (2013) spelled out the implications of these findings: "Students, especially those in high-need schools and districts, need strong principals" (p. 21).

The Lynch Leadership Academy and Leadership Effectiveness

With these challenges and possibilities in view, the Lynch Leadership Academy at Boston College aims "to enhance the lives of urban children and families by strengthening the leadership capacity of urban K-12 principals and headmasters from Catholic, Charter and District schools" (Lynch Leadership Academy, 2011). Blending insights from the fields of education (Bambrick-Santoyo, 2010; Saphier & King, 1985) with business management (Boynton & Fisher, 2011; Halpern & Lubar, 2003; Heifetz & Linsky, 2002), the Academy approaches "change as a multidimensional process that involves all aspects of the organization: its structure, its politics, and especially its people. . . . a process that requires people to learn new technologies, practice new behaviors, and ultimately, adopt new beliefs" (Evans, 1996, p. 15).

Employing a cohort model, the Academy has enrolled 20-to-25 "early-career" principals, called "Fellows," for each of the past four years, drawing participants from elementary, middle, and high school levels.[1] During this year-long experience principals from Catholic, charter and district schools engage in individual and collective learning endeavors driven by three curricular themes[2]: generating a common school culture committed to success for all students (Saphier & King, 1985; Sarason, 1971); distributing leadership by creating a climate of trust in which Fellows share authority school-wide (Spillane, Halverson & Diamond, 2001; Spillane, 2005); and instructional leadership focused on changing teaching practices school-wide (Bambrick-Santoyo, 2010; Hargreaves & Fullan, 2012; Short & Spencer, 1990).

As implied by its focus, for the Academy the principal represents a critical leverage point in a school "system" that comprises multiple interacting elements and dimensions (Davis & Sumara, 2006; Fullan, 2005). Moreover, the Academy endorses a leadership style centered on facilitation and team building as mechanisms for promoting school-wide adaptive change. Research certainly supports this approach (Elmore, 2000; Grissom, 2011). The Wallace Foundation (2011), for instance, notes that effective leaders build "a community of professionals focused on good instruction [who] . . . encourage the development of leadership across the organization [since] . . . effective leadership from *all* sources—principals, influential teachers,

---

[1] At present, the Academy also works with "aspiring principals" and has integrated work with this group into the overall experience.

[2] At the time of this study, the Academy had three curricular foci. Over time, this has been expanded to include additional areas.

staff teams and others—is associated with better student performance" (pp. 6-7). For the Academy, generating adaptive change in urban schools requires principals to create conditions that allow teachers and students to flourish. These schools need "system thinkers in action" (Fullan, 2005, p. ix).

Theoretical Orientation:
Complexity Theory as a Lens for Conceptualizing Educational Transformation

To illuminate the Lynch Leadership Academy experience and associated efforts of Fellows at their schools we draw upon complexity theory (Davis & Sumara, 2006; Stacey, 1996), in particular, the "complex adaptive system" (CAS) heuristic. This analytic frame offers a means to conceptualize the workings of non-linear systems in which an array of diverse but interdependent elements operating at multiple system levels, interact with and adapt to one another, generating discernible patterns and routines though not necessarily in a predictable manner (Lewin, 1999). Through processing information and transforming behavior in response, complex systems adapt and endure (Hoban, 2002). This systemic view seems compelling, as nothing stands alone; everything interconnects. Therefore, framing urban school leadership systemically can illuminate system dynamics and point to implications for transformation.

Initial Conditions and the Role of Disequilibrium in Transforming Systems

Educational systems experience ongoing change and disruption; policy, curriculum, leadership, and personnel change perpetually. Such changes can be positive or negative, substantive or superficial, transformative or temporary. A school system may or may not return to the status quo. Where one starts with educational change often impacts where one ends up; the initial conditions a reform experiences can mediate change notably, setting parameters commonly having political, cultural and academic dimensions. And while a system disruption is not sufficient to ensure transformative change, it is necessary. To transform a system in the varied contexts of schools, some sense of "disequilibrium" (Nadler, 1993; Wheatley, 1999)—whether "turbulence" originating from outside the system or internal "perturbations" intended to generate adaptive change (Beabout, 2012)—must ready the system "for transformation. . . . experiencing new opportunities, new challenges, and new ways to understand the world" (Reigeluth, 2008, p. 27). Such disequilibrium can arise from varied sources—diverse points of view from within the school, the presentation of new ideas, constraints on resources, new opportunities, or changes in the larger context (Lichtenstein & Plowman, 2009; Uhl-Bien & Marion, 2009). Moreover, since contexts shift, to endure, systems must regularly self-organize, abandoning the comfort of equilibrium for the possibility of greater adaptive power. This point is critical: equilibrium and the status quo are attractive states. If system elements continue doing what they had always done, there is no transformation (Gilstrap, 2005). Disruptions to the status quo and attendant disequilibrium must somehow preclude this outcome (Davis & Sumara, 2001; Goldstein, Hazy & Lichtenstein, 2010).

Distributing Control Through Decentralized Networks

Understanding the collective response to disruptions in the status quo reveals whether system elements now interact in different and perhaps more adaptive ways. Ultimately, system elements must generate new relationships and interconnections; otherwise, the status quo endures. Moreover, since adaptive systems are active at multiple levels, the need to distribute authority and control seems unavoidable (Elmore, 2000; Fullan, 2007; Wallace Foundation, 2011). Given these factors, research points to the logic of using decentralized networks of interdependent elements to poise a system for adaptive change. By facilitating information exchange and empowering participants to promote understanding and ownership reform (Daly, 2010; Meadows, 1999), decentralized networks offer a mechanism for distributing leadership, as new structures and roles emerge to support new-found responsibilities (Denis, Langley & Sergi, 2012).

Enhanced relationships among network members also strengthens relational trust, and therefore system interactions, by allowing school personnel to experience their colleagues' competence, sincerity, and reliability—three factors linked to enhanced relational trust (Bryk & Schneider, 2002; Moolenaar & Sleegers, 2010). Moreover, in the swirl of seemingly endless reforms and ever-escalating responsibilities, few urban principals could fulfill every expectation of school stakeholders. Here too, as Kathleen Martin (2004) observed, one sees a logic to distributing leadership: "[A] network of relationships creates new capacities that work to enhance individual freedom while simultaneously expanding organizational possibilities. . . . [A] living organization is always evoking new possibilities through new relationships among its members" (pp. 5-6).

The network structure itself is critical as well. Highly centralized systems—like most schools and school districts—are unresponsive and therefore vulnerable because system elements have limited autonomy and limited ability to respond to shifting circumstances (Gilstrap, 2005). (See Figure 1). Decentralized systems possess a more flexible, adaptive balance between local ties and more distant links to complementary sources of insight and power. (See Figure 2). Davis and Sumara (2006) touted the benefits of this structure:

> [In decentralized networks] most interactions of an 'agent' . . . are with its closest neighbors, consistent with the complexivist insight that most information in a complex system is local. However . . . every agent is also reasonably well connected to every other agent in the network through a relatively small number of connections. (p. 50)

As they concluded, when the goal is adaptive change, "the evidence in favor of decentralization is overwhelming" (p. 84).
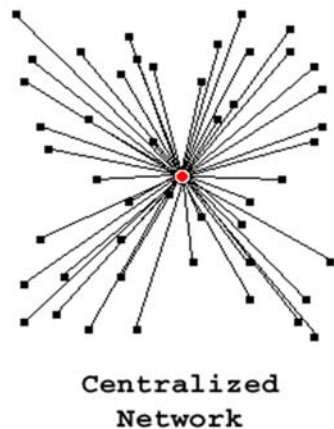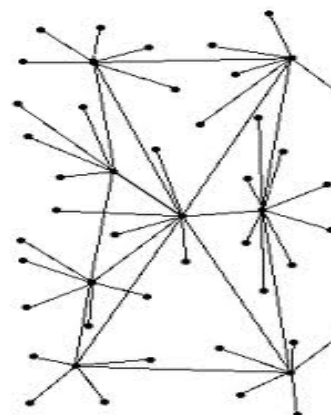
Figure 1: A Centralized Network

Figure 2: A Decentralized Network

Centralized
Network

Creating a Common School Culture

While complexity theory underscores the emergent and variable nature of system interactions, complex systems do not produce infinite outcomes. Rather, influences known as "attractors" act as "magnetic forces that draw complex systems towards given trajectories" (Gilstrap, 2005, p. 4; Johnson, 2001). One common attractor is culture, the framework of values, beliefs, and symbols through which individuals interpret and act on the world (Geertz, 1973). In schools, cultural values and beliefs underlying "standard operating procedures" generate a logic for how things are done (Goldstein, Hazy & Lichtenstein, 2010), shaping behaviors and attitudes in ways that lead to the emergence of distinct expectations, practices, and processes. In essence, culture generates the mind-sets from which systems arise (Gee, 1996). By nurturing a common culture school leaders can accommodate differing ideas and practices while preserving the fundamental integrity of their mission and values (Davis & Sumara, 2001; 2005). As Thomas Sergiovanni (1984) explained:

> [I]n excellent schools a strong culture and clear sense of purpose . . . define the general thrust and nature of life. . . . At the same time, a great deal of freedom is given to teachers and others as to how these essential core values are to be honored and realized. (p. 13)

Thus, cultural values are central to adaptive change. For reform to take hold, for a new system to arise, structures must change, but so must attractors (Goldstein, Hazy & Lichtenstein, 2010). For school leaders the implications are clear: adaptive leadership is a never-ending process that requires school communities to collectively and consistently evaluate taken-for-granted assumptions about effective teaching, student achievement, and parent involvement, among many other matters (Elmore, 2000; Fullan, 2005; Gilstrap, 2005).

Methods: A Systemic Analysis of Two Urban Schools

Our research represents a multi-participant case study (Stake, 2006) that utilizes key constructs from complexity theory—initial conditions and disequilibrium, networked interactions, and the role of school culture—to assess issues of leadership and change in two urban schools. Both our view of leadership as a process and reliance on complexity theory as an analytic framework

have methodological consequences. Regarding leadership, Jeffrey Goldstein, James Hazy and Benyamin Lichtenstein (2010) offered a conception embodied in neither a specific person nor role. For them, "leadership happens in 'the space between' people as they interact. . . . [T]he true catalysts of innovation are the web of relationships . . . that connect members to each other" (p. 2). Building on the centrality of relationships, Dean Fink (2000) (quoted in Hobban, 2002) spoke to the possibilities and limitations of utilizing the CAS heuristic to conceptualize educational change:

> [P]reventing, or at least minimizing, the attrition of change requires attention to a complex interrelationship of many factors that influence purposes, structures, and cultures in schools. . . . The complexity of . . . their connections and relationships, make it virtually impossible to determine exact pathways of causation, and therefore impossible to predict with certainty that attending to this factor or that will ensure a school's continuing growth and development. The best that can be said is that schools that become aware and attend to the factors [identified earlier] will be more likely to retain their innovative edge and remain 'moving' schools over time. (p. 38; emphasis in original)

Accordingly, our research design seeks to "illuminate multiple causalities, multiple perspectives, and multiple effects that constitute complex activity within and between complex systems and subsystems from the perspectives of interacting agents" (Opfer & Pedder, 2011, p. 396). This seems sensible as, ontologically, schools can be understood as systems of relationships. Delineating their dynamics should reveal how the system operates and how it might be transformed, thereby addressing a longstanding concern in the field of policy development noted by James Spillane and colleagues (2002): "If implementation scholarship is to move beyond simply documenting that policies . . . evolve during implementation, it must... unpack how and why policy evolves as it does" (p. 419). Specifically, our research describes how our case study Fellows perceived the Academy experience and, in turn, how that shaped subsequent actions. In doing so, we address three research questions:

- How did the policies and practices promoted by the Lynch Leadership Academy influence Fellows' work as urban school leaders?
- How has their leadership influenced what happened at their schools?
- What can we learn by using features of complexity theory to frame the experience of the Academy principals and their schools?

Data collection was qualitative and occurred over a three-year period, starting with the Fellows' Academy experience. We visited each school a dozen times, observing classrooms and various meetings. We formally interviewed each principal three times and informally throughout school visits. We also interviewed teachers, parents, and students. Interviews were conducted using open-ended protocols prepared by Academy faculty and revised as interviews progressed to address emerging themes. Transcripts were coded line-by-line to reveal emergent themes (Charmaz, 2000). Data analysis was "consensual," as researchers coded data and generated themes collectively (Hill, et al., 1997). Our extended timeframe enabled us to focus and recalibrate our interviews and observations over time while addressing a lack of extended studies in the field, where adequate follow-up is rarely given to schools once the "hoopla" of reform subsides (Alsbury, 2008).

Dreaming Big and Buying In: A Catholic School's Response to System Turbulence

St. Catherine's School (SCS) is an urban K-8 school in Boston, MA. Its principal, Helen Matthews, an energetic and charismatic woman, has a long history at SCS—she taught middle school science for 14 years and worked as assistant principal under the principalship of a nun for seven years. We began this study in her fourth year as principal—the year she attended the Lynch Leadership Academy.

Helen entered the Academy knowing she wanted to change the structure and style of leadership at SCS:

> [Under the leadership of the] former principal . . . it was all top down. . . . very strict, very regimented. . . .[There was] very little freedom for faculty. . . . [T]hat wasn't me. I wasn't comfortable with that leadership style. . . . I wanted to learn how to be a principal who could recognize leadership in others and then empower those people with the proper tools and resources.

Speaking with Helen and SCS teachers over three years revealed that the Academy helped her enact the distributed leadership style she envisioned:

> [My style] is definitely not top-down. . . . But that's all I was mentored [to do]. . . . But then I started Lynch Leadership and it was like, "Wow, I don't have to do that! There are other options here!" So for me personally, [the Academy] made me realize what kind of a leader I want to be. And it's given me the tools and resources to get there. . . . [As a result] most of [our teachers] have stepped up to the plate and are sharing things that took large portions of work off my plate. . . . It's a lot of work. There are a lot of pieces that you have to put together. But they have stepped up and taken off [with it].

Initial Conditions, Disequilibrium and Balance

In 2011, the first year of this study, many SCS teachers had been there more than ten years, a substantial portion over 20. Every teacher—except the art teacher—was a White woman. Over the past 10 years, this stable, homogenous staff experienced a drastic shift in its student body and surrounding neighborhood: a predominantly White population was replaced by a majority of Blacks and Latinos. Helen was deeply committed to changing the status quo at SCS to meet the needs of this new population.

At this time, when many Catholic schools had closed their doors or were barely surviving, SCS too experienced economic strain, leading teachers to believe they had to change, and improve substantially, to remain viable. In response to this external turbulence, Helen perturbed the SCS system, collaborating with faculty to rethink curriculum, teaching practices and school structure, challenging them to join her in creating a culture founded on shared leadership:

> I'm not one to go around and tell [teachers] what to do. I'll give you guidance. I will direct you. But it has to be teacher-led. If they don't own it, and they don't buy it, I'm just spinning my wheels. . . . So it was a big paradigm shift for this faculty [to take on shared leadership].

Teachers confirmed this shift in leadership style. A veteran teacher's comments were typical:

> [T]he school could not exist the way it had been going. . . . I love the changes that are happening because it's forcing everybody to step up their game. So many teachers become complacent and just do what they've done year after year after year. . . . [But] the ideas she's bringing back [from the Academy] help us think about how we can do things a little different to reach more kids. . . . She's forcing us to do that. . . . [I am] becoming a better teacher by what she's bringing back [from the Academy].

Faculty expressed optimism and buy-in for Helen's efforts to disrupt the status quo. As one teacher remarked, change can be difficult:

> When you've been teaching for a long time and if you were taught to teach in a certain way, it's basically taking everything you did and kind of throwing it out and asking you to start over. So it's been a lot of changes thrown at us at one time. . . . I love teaching, but it is more stressful than it used to be.

While growth in any system requires disequilibrium, too much change can lead to rejection or resistance (Nadler, 1993). To avoid this, balance is key (Opfer & Pedder, 2011). Responding to these conditions—economic strain, shifting demographics, engrained habits, and pressure to enact change—Helen balanced challenge with empathic support. In turn, teachers began working collaboratively and assumed leadership roles. Behavior policies were revised. Instruction became more differentiated and project-based. One teacher reflected on Helen's ability to facilitate change while supporting teachers:

> I can't even imagine [what it is like for] some of the teachers who have been here 25 or 30 years. . . . And all of a sudden they're getting all these new changes. It might be a little scary. But I think they feel comfortable, because they see so many other people are willing to help them out. And they're open about it. They'll say: "We're nervous about the change." And I think Helen wants that. [She will say,] "Lets try to work together," and "This is where we're going." She's patient with that.

Confronted by system turbulence, Helen Matthews began her principalship intending to shift the school's leadership style—and she did, thereby altering the status quo. The collaborative and distributed nature of these changes allowed for the ensuing disequilibrium to be balanced by support and collaboration. In large part, this occurred through creating networks to distribute leadership and authority and enhance collegial interactions.

Distributing Control, Creating Networks & Promoting Trust

Building on the notion of distributed leadership promoted by the Academy and in response to the turbulent context that enveloped SCS, Helen accorded teachers more responsibility and agency in creating change. During her year with the Academy, several committees were formed, and leadership positions were delegated. An Instructional Leadership Team (ILT) addressed school planning and instructional improvement. Teachers led various school-wide projects: aggregating student performance data, curriculum planning, and organizing extracurricular programs. Ultimately, Helen and faculty created a network of teacher-led groups: the ILT, Student Support Team, Curricular Planning Team, Grade Level Teams, and Academic Teams across grades (See Figure 3). One teacher offered her sense of Helen's thinking: "Helen's attitude is that she can't do everything, and that we're professionals. And so

she gives a lot more responsibility to us, and basically thinks we need to own what we're doing."

Two points are noteworthy here: first, many teachers belonged to more than one team and therefore had multiple opportunities to disrupt old practices and expectations—laying a foundation for relational trust (Moolenaar & Sleegers, 2010). Second, and perhaps most telling, Helen belonged to only two teams—the ILT and the Student Support Team. She oversees group work, but established early on that teachers would direct these teams. This represents an adaptive shift for faculty who spent many years following administrative directives rather than creating them.

Figure 3: Networked Teams at SCS
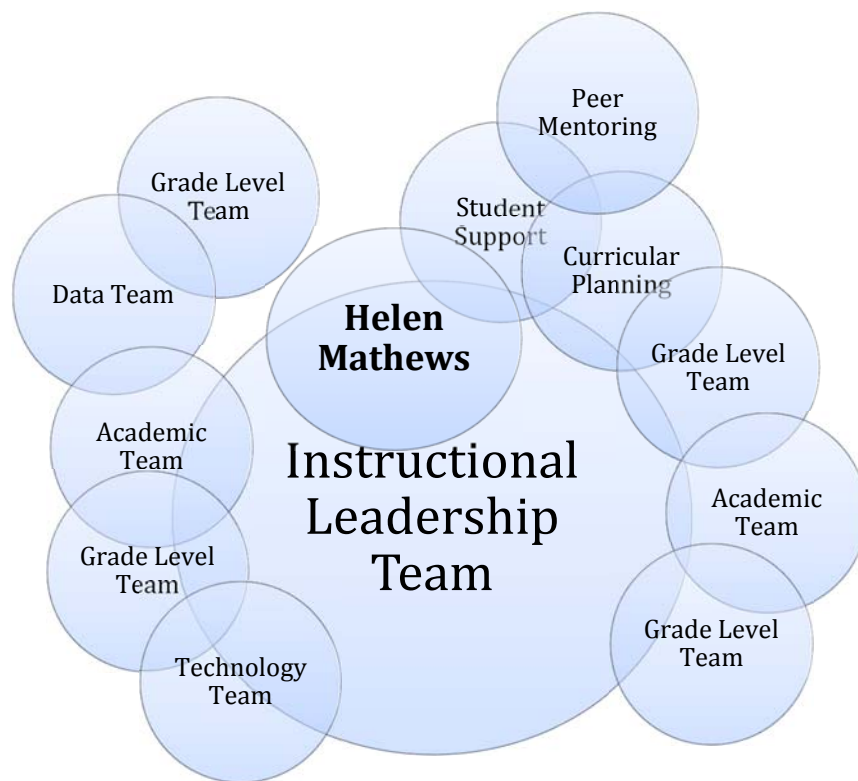
Distributing authority via networks has been complemented by an informal emergence of shared leadership. In the three years SCS teachers have been encouraged and cajoled to assume increased responsibility, shared learning and innovation seem to have increased as well. One teacher described how Helen pushed those more adept at certain skills to contribute even more:

> If someone says, "I can't set up these centers. This is really difficult for me," or, "How are you doing your reading groups?" then we can observe each other and share those ideas. . . . One thing that has been successful with those particular teachers is pairing them up, saying, "Ok, this particular thing is stressful for you. So-and-so is very good at that." For example, with the instructional planner [and] curriculum mapping [a new system for teachers to share curricula online]. . . . [Helen] said, "People who feel comfortable here, I need you to do more."

Another teacher remarked how her grade level team was helped to develop assessments by another team. Now her team would "pay it forward," teaching the strategy to still another team—all of which emerged spontaneously.

These networks proved valuable. Teachers had autonomy to act and self-organize (Davis & Sumara, 2006) to benefit the school and foster professional capital (Hargreaves & Fullan, 2012) while encountering opportunities to display their competence, sincerity, and reliability— thereby enhancing relational trust school-wide. As studies of social networks have shown (Borgatti & Ofem, 2010; Coburn, Choi & Mata, 2010; Daly, 2010), organizational structures such as the ones that Helen implemented can be effective means to create social tie formation, establish trust, distribute leadership, and establish a common culture, because "building and nurturing strong social relationships around the discussion of work-related matters increases teachers' trust in their colleagues, which in turn affects the willingness of teachers to take risks and be vulnerable and open to new practices and knowledge in order to improve school performance" (Moolenaar & Sleegers, 2010, p. 110).

Dreaming Big: School Culture as an Attractor

In schools, attractors often exist in the form of core values or beliefs that guide a school through important decisions as well as daily routines (O'Day, 2002). Charles Reigeluth (2004) spoke to the importance of such core beliefs:

> The most powerful [attractors in schools] are core ideas and beliefs. . . . However, to have a powerful influence on the features that emerge in the system undergoing transformation, the core ideas and beliefs must become integral parts of the mindsets or mental models held by a critical mass of participants in the transformation process, and, therefore, they must collectively comprise the culture of the transformation process as a system. This means that the major focus of a systemic transformation process in a school . . . must be on helping all stakeholders . . . to develop a set of shared core ideas and beliefs about the ideal kind of educational system they would like to have. (pp. 16-17)

Aligned with this view of culture as an attractor, Robert Axelrod and Michael Cohen (2000) described the influence of social norms in complex adaptive systems:

> [N]orms are often important regulatory mechanisms. Central monitoring and control can be difficult when many agent interactions are widely distributed across physical or social spaces. Criteria that the agents themselves apply are a very attractive alternative. Especially when they become internalized, norms regulate not through fear of consequences but through the belief that some actions are right and others wrong . . . [O]nce established, a norm can be reinforced and spread by dispersed agents who accept the norm. (p. 150)

The SCS school culture was notably influenced by Helen's work with the Academy and her new emphasis on distributed leadership and building a common school culture. During the Academy Summer Institute Helen regularly heard that to be effective, leadership must be distributed. Tiffany Cooper Gueye from Building Educational Leaders for Life told Fellows, "One person is not in charge of school culture. The culture-building process must be owned by everyone." Ultimately, all stakeholders should understand and embrace a shared culture because they actively participated in building and enacting that culture.

The creation and teacher-dependent maintenance of SCS teams represented a marked shift in the school's ideational system: all being manifestations of the school's commitment to distributed leadership. ILT meetings, for instance, were rich in the substance and professional exchanges that generate relational trust (Bryk & Schneider, 2002). Consider an exchange during a typical meeting. Helen began by saying, "I want to pick your brains about the process of looking at test results." A teacher replied, "I think it's a waste of time to look at tests during the professional development day." Though something of a challenge, Helen acknowledged the teacher's concern without getting defensive, and teachers continued challenging Helen and each other:

> Helen: I am planning on having us look at the instructional planner3 in September.
>
> Teacher 1: We will have a real delay then. You said it should be done by September.
>
> Teacher 2: I think we need to review it in June, not wait until September.
>
> Helen: We need [to present] a PowerPoint to look at [our] test scores. We can do that the morning of June 14th. Then in the afternoon we can look at the instructional planner.
>
> Teacher 1: We had talked about standards teachers should know.
>
> Teacher 2: [Teacher 3] has been working hard on standards. [A few teachers thank her.] Teachers should have a Q&A about the instructional planner and set goals for it.
>
> Helen: Okay, so set goals for the instructional planner at the meeting.
>
> Teacher 3: Teachers won't have a lot of questions. We need a set agenda because some teachers will want to leave and others will be discouraged from asking [questions].
>
> Helen: Thank you! That is why I need you all to be my eyes and ears! [Laughter.]

Here, teachers shared opinions openly, offered contrasting viewpoints (to one another and Helen), and shaped meeting outcomes, some of which led to increased responsibilities for their colleagues. Helen initiated most topics but a creative tension permeated the meeting, balanced by a respectful sense of collaboration. Helen not only accepted teacher input but was appreciative—which she readily acknowledged, thus modeling trust in faculty. These interactions differed notably from what had been typical at SCS.

In like fashion, distributed leadership informed SCS efforts at creating a common school culture. After an Academy trip to Washington, DC schools, Helen proposed a way to coalesce many emerging changes under a unified and inspirational theme: DREAM BIG, which stands for Determination, Respect, Excellence, Accountability, Mastery, and Belief in God. From the outset, Helen sought a collaborative process:

> I certainly wasn't going to put something on [faculty] they didn't buy into. I suggested "DREAM BIG." I said, "This is what it looks like to me. What are your thoughts?" And immediately the whole faculty said, "Let's do it."

In the words of one teacher, many faculty welcomed this idea:

---

[3] The instructional planner was a Diocese-wide reform that proved challenging for some SCS faculty.

> [Helen] started the ball rolling but then we picked it up and kept going. I think if we didn't like the idea and went back to her and said, "This is crazy," she would be receptive to that. But everybody just jumped on it. And everybody was like, "This is great."

How adults at SCS came together around shared concerns suggests the potential of distributing leadership and creating a shared school culture: in tandem, they offer a means to enact substantive change aligned with cultural ideals while generating relational trust in the process. By sharing authority, Helen modeled trust in faculty. As they collectively enacted new-found power, opportunities arose to display their professional integrity, enriching relational trust school-wide while fostering the capacity and willingness of teachers to change roles, practices, and expectations within the school.

Summary

This case study describes a community of learners undergoing rapid and substantive change. In response to system turbulence, Helen Matthews disrupted the SCS status quo—engendering a sense of disequilibrium (Nadler, 1993) as a precursor to adaptive change by distributing control and authority, generating networks to enact that power, and promoting a shared culture—all of which enriched relational trust and facilitated system change through both formal committees and emergent leadership opportunities where teachers collaborated in relative autonomy. The nature of this system had shifted. The networks SCS created required teachers to embrace new roles and leadership responsibilities, and attempt new teaching practices, all of which seemed related to a palpable sense of trust and buy-in—for each other and Helen's leadership.

Why Buy-in?: A District School Leader's Struggle to Disrupt the Status Quo

Jeffrey Jackson Elementary School (JJES) is a K-5 school in Boston, MA that enrolls a largely Latino student population. In Fall 2011 (the first year of our study), Harold Weatherbee became the school's third principal in three years. Like SCS, JJES teachers are experienced, many having been there more than 10 years, and several over 20. JJES also experienced significant and rapid change in its neighborhood and student population—from a largely White population to one that is almost entirely Spanish speaking. Harold entered the Academy in the same cohort as Helen, the summer before starting at JJES. He too succeeded a principal with an authoritarian style and intended to change JJES leadership dynamics to a more inclusive, decentralized structure. Harold reflected on this situation in a report for the Academy:

> The principal before me was very effective at leading with a top-down authoritarian style. . . . Although results were evident, the leadership method was not in full accordance to my mind-set, skill, and conviction. . . . During many initial conversations [they seemed to] need direction, decision-making and guidance. I often asked, "How was this done last year?" The staff consistently echoed, "The principal made all decisions."

From Harold's perspective, his leadership style is "a blend of tight and loose with high expectations," blending teacher accountability with a sense of comfort and ease while focused on student achievement. Overall, Harold sought to shift school culture toward a more collaborative, less hierarchical structure where information flowed easily:

> I have worked a lot on changing the culture and the team atmosphere. . . . One of the strands that I really took [from the Academy] is that, "We are crew, not passengers." . . . [I]t is a catalyst of a lot of our conversations here at the school. We have been doing a lot of team building and team communication.

Though both principals sought to decentralize authority by creating networks and generating a common school culture, the plan manifested very differently at JJES than SCS.

Initial Conditions, Skepticism and Principal Turnover

Though embracing similar leadership orientations, the contexts in which Helen and Harold sought to promote adaptive change differed notably, as did the outcomes. JJES is a district public school. For the most part, teachers have job security. The pressure so palpable at St. Catherine's was nowhere to be found—except in the rhetoric and aspirations of Harold, who like Helen, was inspired by the Academy to bring a sense of urgency for change to JJES.

His first year at JJES, Harold sought to establish his presence as a supportive, trustworthy leader. As one teacher remarked:

> He really works hard to make the situation best for the individual [teacher]. If it means he has to cover someone else's class so that they can go work with that particular child or that particular group, that's what he'll do. . . . It's the first time I've seen that.

Teachers also appreciated that Harold trusted them, whereas previous principals encroached on their autonomy. In one teacher's words:

> [I was] micromanaged to the point that I didn't want to do [extra work] anymore. [Harold] has not done that at all. He's pretty much handed it over and said, "You know what you need to do. Keep me posted if there are any issues." . . . I just feel like he's trusting me to get done what has to get done. . . . It's put less stress on me because I know what needs to get done.

In addition, Harold was persistent about improving achievement but also empathetic, supportive, and trusting—his blend of "tight and loose with high expectations." Despite efforts to establish new ideals, a tacit sense that teachers would resist if pushed too hard generally prevented change from reaching the classroom.

Although faculty liked Harold, being third in line in a rapid succession of school leaders hindered his ability to transmit a sense of urgency to teachers—leaving him in a more difficult position than Helen. In Harold's first year a veteran teacher reflected on the impact of rapid turnover:

> [W]e've had three different principals in the four years I've been here. And each principal has their own missions and their own ideas of what they want the school to become. . . . [F]or the staff, it's kind of hard to relate to each [principal], not knowing how long they're going to be here or how much time they should put into any new initiative if someone else is going to come in and change it.

A younger teacher outlined Harold's predicament in a way that seemed both cynical and revealing:

> To make [change] happen, there is a toll that has to be paid. Before you get on the good side of these people—who are very, very, very set in their ways—you have to sort of placate them first.

> No matter what your values are, if they're at all different from theirs, you have to placate them. . . . You have to be harmless and helpful. If you are those two things only then will any of those teachers care at all what you think about anything.

Such advice offered a dire warning for a new school leader, especially one with Harold's history.

JJES is the second school where Harold has been principal. He entered education after working in the financial industry. He did not teach long, and took a fast-track toward administration. His first experience as principal, at another BPS school, lasted two years, after which he was transferred to JJES. In Harold's view, he tried to implement changes that benefited students, but faculty complained to the district. Afterwards, he was transferred. Harold commented on the situation:

> I went to slowly change [school practices], but my slow was still too fast for them. . . . I wanted to undo some of the folks who had power [and] . . . weren't invested in the interest of children. When I started doing that, I got a lot of flak internally. . . . I felt like, "If I'm going to go down, then I'm going to go down doing what's right for the kids in my eyes and my convictions." I knew that would create a lot of heat. But it had to be done for the sake of the children.

Elaborating on his sense of being constrained by the status quo, Harold continued, "The district has learned to accept mediocrity. . . .That was not written but was definitely said to me . . . 'Don't upset the teachers too much.' Peace and tranquility are what the district wants."

At JJES Harold cautiously dealt with teachers and acknowledged that he avoided pushing them:

> [C]oming to [JJES], I decided not to change the world; just move what I can. . . . I felt like, "Okay. I understand. Okay. Don't get teachers upset. I understand. . . . Try and nudge. Try and lead." . . . So my mind-set is different. I'm not trying to change the world. I'm not trying to be the educational Martin Luther King. I take what I can get, and I go from there. And we try to chip away from the [achievement] gap, little by little.

Harold's power and autonomy were further constrained by district policy. A teacher commented on this matter:

> It's pretty hard to [change curriculum and instruction] because a lot of [district guidelines are] already programmed for you. . . . [T]he math you teach is set. And you have a timetable to go by. And pretty much you try to stay on that. Everybody is giving a test at the same time in the city. For reading, you have the Reading Street curriculum. So you're pretty much following that.

District restrictions on hiring, firing, and retaining staff further complicated Harold's leadership. For instance, Harold wanted to retain two Spanish-speaking teachers—as JJES serves many Spanish-speakers—but due to union rules he was forced to replace them with teachers who had more seniority but did not speak Spanish. On another occasion, the district added a kindergarten classroom and required Harold to interview only internal candidates. There were five applicants, none with kindergarten experience. Yet Harold found "a ton of [qualified] external candidates" who he could not hire.

Both Harold and JJES teachers experienced professional turbulence: living with substantial principal turnover (from the faculty perspective) and an imposed job transfer (from Harold's point of view). Driven by his Academy experience, Harold sought to perturb his school system,

to disrupt the routine. Teachers, who had already endured the turbulence of principal turnover, were more inclined to preserve the status quo.

Nonetheless, life at JJES did change after Harold arrived, but that change came about mostly outside the classroom. For example, JJES instituted a school uniform policy and created a school crest, both points of pride for the school community. The school hosted its first Fall Festival in 2011, a Saturday school-wide gathering with food and games. Parents were recruited to attend the district-sponsored Parent University, for which staff enlisted parents and provided daycare and transportation. There was a 5K family run/walk fundraiser, and throughout the year JJES held "Friday Night at the Movies" where parents and students returned to school to watch a family film. Behind this renewed engagement, teachers assumed new responsibilities. Yet none of these efforts sought to improve teaching and learning. Instead of generating adaptive changes, moving "beyond their comfort zone . . . to integrate new knowledge or reshape existing perceptions" (Nadler, 1993, p. 59), JJES teachers maintained a familiar equilibrium, especially in the classroom. Another way to understand this systemic pattern is to examine how network structures were created to distribute leadership.

## *Distributing Control, Creating New Networks*

For Harold, a focus on school culture and climate meant systems, structures, and norms for transparent communication had to be in place. In Harold's view, he "worked hard to build [a] communication cycle through the whole school. . . . [A]t the same time, it forces me to not be an authoritarian type of leader. It is a collaborative effort." Hoping to promote collaboration and distributed leadership, he continued:

> I want teachers to feel they have voice. . . . I want them to say that this has been a collaborative experience. . . . [T]he objective goes back to this school being a collaborative and well-organized team. . . . The ultimate end result is that I want students to learn.

Harold therefore created new structures of communication—all of which can be understood as networks.

Given his tenuous relationship with faculty and negative past experiences, in working with networks Harold sought to control communication. Though promoting broad collaboration, he felt compelled to manage the process of establishing a positive, results-oriented school culture—putting himself at the center of all JJES networks. (See Figure 4).

Figure 4: Networked Teams at JJES
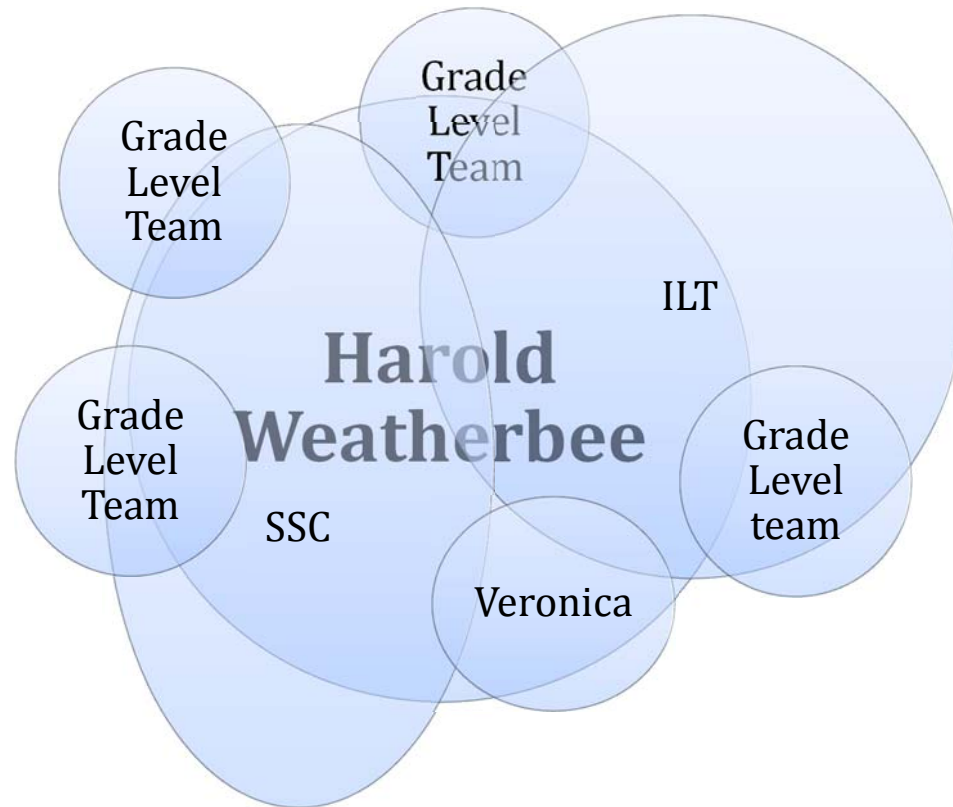
Harold's "cycle of communication" involved a three-tiered network: an Instructional Leadership Team (ILT) serves as the primary faculty decision-making body. The School Site Council (SSC) includes parents and teachers and addresses non-instructional, school-wide issues, such as community events and fundraising. And weekly, Harold meets with each Grade Level Team. In creating these groups Harold aimed to generate productive conversations and ensure that decisions emerging from these networks were embraced school-wide.

As Figure 4 reveals, all networks were highly centralized, with Harold at the nexus of every one. While teachers described the ILT as "faculty-led," Harold established group norms, set the agenda, and facilitated each of the five ILT meetings we observed; only when Harold was absent did a teacher chair a meeting. A similar dynamic pervaded Grade Level Teams and the SSC: Harold directed what happened; others seemed less invested.

While Harold kept himself at the center of each network, some administrative tasks required assistance. Often, he sought help from one paraprofessional, Veronica. His first year, Veronica led several projects, including fundraisers and parent outreach. The next year she became Community and Family Coordinator, leading one teacher to say, "That's a big change. She's doing a ton. . . . Most of the stuff she's doing is extremely valuable. I don't even know how she's doing it." Likewise, Veronica impressed Harold:

> I have [Veronica] as a teacher and community coordinator, so I'm not doing a lot of running around, doing events. . . . We have a lot of family events that she helps organize so all teachers need to do is . . . their part, and she'll run the rest. . . . So teachers can focus in the classroom.

Learning organizations, such as schools, are most effective and responsive when control is decentralized to include multiple stakeholders (Davis & Sumara, 2006). Given his rocky past and resistant JJES staff, Harold approached school-wide collaboration cautiously. Though ostensibly sharing power, the network structure he created remained highly centralized. Believing that if he controlled communication he could shape school culture and practices to align with his vision, Harold dominated each network. When work proved substantial, Veronica, not classroom teachers, assumed increased responsibility. Consequently, teachers remained on the periphery of the networks Harold created, and changes that took place did not impact teachers significantly.

School Culture, Student Achievement and Teacher Autonomy

Although complexity science emphasizes non-linear, and therefore non-predictable, outcomes, within complex adaptive systems forces known as "attractors" lend a measure of predictability to how systems operate by shaping behavioral patterns (Larsen-Freeman, 1997; Wheatley, 1999). In schools, culture—what people believe and value—can influence behavior notably. At JJES, Harold told faculty "We are crew, not passengers," aiming to promote a shared commitment to a vision of successfully educating every student.

Reflecting on how networks can generate adaptive change among reading teachers, Cynthia Coburn (2001) offered this summary:

> [W]ithout opportunities for deep engagement, with the time and structure to delve into and construct an understanding of messages from the environment and figure out ways to integrate new practices or ideas into the complex world of the classroom, it was unlikely that messages about reading touched classroom practice. (p. 159)

Michael Fullan (2005) spoke to this matter as well: "[A]daptive challenges require the deep participation of the people with the problem" (p. 53).

JJES teachers did not engage deeply or collaboratively to enact substantive change. Consider how meetings were enacted. In grade level meetings, given Harold's presence, teachers had no time to collaborate autonomously. At ILT meetings, curriculum- and instruction-related conversations reliably veered toward patterns of blame, defensiveness, and cynicism. In one meeting, Harold introduced a protocol for literacy instruction. A district initiative, teachers offered pushback—against the protocol and against the fact that the district offered another "new" teaching strategy teachers should embrace. As Harold presented the protocol, teachers grew increasingly vocal. Three experienced faculty commented in succession: "This is the problem of reinventing the wheel!", "What is the true purpose of this?!", "Is this going to be out the door in a couple years?" Harold tried to remain on topic, reaffirming that the initiative aimed "to build [reading] comprehension." The learning specialist joined in to explain the protocol, to no avail. Concluding this agenda item, Harold said he would follow up in grade level meetings.

The conversation then moved to teachers examining data together—a practice Harold hoped to make an ILT norm. Again, teachers resisted. An experienced teacher observed, "We are testing more than teaching some weeks." Another added, "We are not teaching because we're testing. So [students] fall farther behind." Harold said he would try to find support

during intensive testing weeks while quickly shifting to press the team to strive for 100% proficiency on upcoming standardized exams:

Harold: I want to lay a new goal out. No failures. Nobody fails. Nobody in red [below proficient].

Teacher 1: Impossible. You're going to need more services. [Others also say, "Impossible," and Teacher 1 talks about the extra services this would require.]

Harold: Students need interventions but we are not getting to them.

Teacher 2: What are the actionable principles? I want an idea from you about what are the most actionable ideas that we can get this year. There is no point in talking about more teachers and smaller classes.

Teacher 3: Students need a step-by-step process. We can't just squeeze their brains to get their scores up.

Harold: I've tried to get extra resources in rooms but I can't afford it. If we said, "Sixty days until [State exams], that no child fails," what would it take [to ensure all students are proficient]?

Teacher 4: Saturdays. Five o'clock [school days].

Harold: Nobody in red [below proficient]. Everybody passes.

The conversation ended with no resolution. The request for actionable suggestions was met by saying no student should fail on the upcoming exam. The gap between Harold's ideals and school culture he envisioned—where teachers believed all students can succeed—and teachers' on-the-ground feelings about challenges they faced loomed large, and resurfaced often.

Nonetheless, Harold did shift school culture. Faculty did embrace their role as "crew," helping create new events, such as the Fall Festival and Friday Night at the Movies. Yet classroom instruction remained unchanged. This cultural dissonance may have been most pronounced in how Harold was committed to ensuring that all JJES students would achieve while faculty questioned this assumption and many efforts to act on it. At SCS, DREAM BIG had a marked presence. At JJES Harold's call for teachers to think of themselves as "crew" seemed less compelling.

Summary

Mindful that complex relations "embody their histories," we cannot overlook how the collective experience of Harold and JJES teachers, both feeling somewhat powerless and constrained, impacted them and the school (Davis, Sumara & D'Amour, 2012). Teachers felt ignored by a bureaucratic system and looked beyond Harold to the larger school system in which they were embedded and whose priorities they may question and resist. This feeling affected their attitudes toward changes Harold proposed. Passive-aggressive uses of power, skepticism and resistance, thinly veiled resentment, and sometimes not so thinly veiled hostility marked the political atmosphere at JJES.

Harold Weatherbee arrived at Jeffrey Jackson Elementary School amidst the turbulence of repeated principal turnover, amongst teachers who learned to survive by protecting their classroom autonomy. With him, Harold brought a commitment to ensuring all students

received a quality education. Imploring faculty to see themselves as "crew not passengers," Harold created networks aimed at distributing authority. For him, these were the first steps toward shifting school culture, from isolated teachers set in their ways to a unified "crew" working toward 100 percent student proficiency.

Yet Harold never disrupted the status quo. Given his hesitance to fully trust teachers, he remained at the center of all networks. District attitudes and policies also constrained Harold's efforts. JJES faculty challenged many of Harold's efforts, and embraced a cultural shift only to the extent that they retained control over their classrooms. They helped organize Parent University but resisted efforts to enact a literacy protocol. This resistance, and a sense of entitlement to autonomy within the classroom, reflects the initial conditions of the school upon Harold's entry. Yet Harold's commitment to educational equity, and his prior experience with teacher resistance, compelled him to enforce control in meetings in hopes of altering school culture.

When Harold arrived at Jeffrey Jackson Elementary School, he was a frustrated educator unable to create the kinds of adaptive changes he thought students needed. For their part, teachers were largely isolated, wary of change, and had unbridled classroom autonomy. Three years later, the school culture remained much the same.

Discussion

Drawing on the notion of a complex adaptive system—an interdependent network of interacting elements that learns and evolves in adapting to an ever-shifting context—our case studies seek to reveal the complexities, tensions, characteristics, and related implications for school leadership derived from using this heuristic to understand adaptive change. In particular, we highlight the need to disrupt the status quo as a precursor to adaptive change, the power generated by distributing authority through decentralized networks, the importance of relational trust, and the impact of school culture.

Disrupting Initial Conditions

Clearly, initial conditions were critical to shaping outcomes at both schools, revealing that one cannot separate "the school" from the network of relations in which it is embedded. This interdependence demands "not only that we examine an event itself, but also the contextual and relational environment of that event" (Despres, 2008, p. 249). For Helen, trust was strong. She had a long history with her school. Her professional integrity was unquestioned. Further, the turbulent economic context Catholic schools faced generated a sense of disequilibrium and urgency. Conditions were right to disrupt the status quo. And Helen did this by allowing for the emergence of a transformed system, creating a decentralized network structure, promoting a constellation of cultural values, and offering faculty multiple opportunities to enact power and authority in a very different institutional context, ultimately "abandon[ing] the need to control and dominate . . . within the dynamic interactions of daily organizational existence" (Bathurst & Monin, 2010, p. 124).

Harold faced a different context, many conditions of which were established *before* he arrived and over which he had no control. JJES teachers viewed principals with some mistrust,

having seen three come and go in as many years. District policies seemed comparably unreliable. Lacking trust, faculty reacted to Harold's plans as they had toward previous principals: with skepticism and resistance. Ultimately, teachers did assume new responsibilities and embrace their role as "crew," but in the classroom the status quo endured.

These studies raise an additional issue: the negative effect of frequent principal succession, which "breeds staff cynicism that subverts principals' credibility and their chances of securing long-term, sustainable improvement" (Hargreaves & Fink, 2006, p. 79). Indeed, as Roger Lewin (1991) wrote, "[R]elationships are the bottom line. . . . [C]reativity, culture and productivity emerge from these interactions" (p. 203). Given the highly relational nature of complex systems such as schools, administrators should not be moved among schools like interchangeable parts, and experienced educators who have garnered respect and credibility should be seen as ideal candidates for school leadership. For Helen, who worked at SCS for 21 years before becoming principal, interactions flowed smoothly. Even teacher resistance served as a source of insight for school planning. Harold, an inexperienced educator, never generated a comparable dynamic. His interactions with teachers were often strained and counter-productive. Consequently, he and JJES struggled with change.

Decentralized Networks & Trust

Decentralized networks facilitate change in varied and interrelated ways. For one, they offer a structure for distributing authority and control (Kohm & Nance, 2009). Change does not come about if people keep doing what they have always done. Interactions must be altered; power dynamics must shift in ways that enhance a system's ability to adapt. Networks offer a means for doing so. This is how Helen accorded power and control to faculty. Harold also created networks, but did not distribute power effectively.

Second, networks generate opportunities for school personnel to experience their colleagues' competence, sincerity, and reliability, thereby enhancing relational trust and the likelihood of risk-taking and innovation (Moolenaar & Sleegers, 2010). At St. Catherine's, Helen initiated a process of professional collaboration enacted through an interdependent network of teams. Teachers planned collaboratively and helped colleagues who struggled with change. Teachers' work became more collective and transparent. The decentralized structure created regular opportunities for the school community to display professional integrity (Bryk & Schneider, 2002), and faculty came to trust one another. JJES was a different story. Faculty seldom discussed teaching and learning as a community. Wanting to control the conversation, Harold was reticent to trust teachers, so he chaired and directed most school meetings. JJES faculty neither saw Harold display trust in them nor had opportunities to promote relational trust with colleagues. They did collaborate occasionally, but largely on matters outside the classroom.

When networked, participants can also draw on their collective knowledge and skills to exceed what individuals might accomplish independently. As Gilstrap (2005) found: "[T]eams can process information at a fast rate . . . creativity spontaneously emerges in team settings . . . [and] teams can handle and adapt to turbulence and ambiguity better" (p. 11). SCS grade-level teams, for instance, helped one another develop formative assessments. School-wide, teams assumed responsibilities that had fallen to Helen, all of which seemed to enrich the school's

academic climate. While Harold created teams, when he encountered additional work, he turned to his assistant, Veronica. In doing so, the school network remained highly centralized.

Moreover, when effective, the sum of a network's actions can exceed that of its individual parts, producing unanticipated outcomes because certain factors prove mutually interdependent: "When individual, social and contextual conditions for learning interact to enhance each other . . . a synergy is created by their mutual influence" (Hoban, 2002, p. 59). This occurred at SCS. Helen empowered individual teachers, assigning them new roles and responsibilities. The team structure led teachers to interact in new ways and thereby brought about opportunities to enrich relational trust. Building on this contextual shift, people shared openly, offering opinions and strategies they otherwise would not risk. Over time, without Helen's direction and with no formal planning time, teachers produced networks around matters of genuine interest to them (Hargreaves, 2001; Moolenaar & Sleegers, 2010). This required them to identify shared concerns, openly communicate those ideas, and develop plans to address them—all of which emerged organically. Nothing comparably unanticipated happened at JJES.

Finally, through interactions they provoke, networks can reinforce cultural values and socialize new personnel into the prevailing culture, both in how you work and what you work on. By creating decentralized networks, Helen signaled a commitment to shared authority, professional development, and mutual trust, among other factors. Her actions reflected both goals and processes that aligned with the emerging school culture (Coburn, Choi & Mata, 2010). At JJES, Harold allowed teachers few opportunities to enact power. Professional networks existed but teachers had little autonomy and engaged in few collaborative actions. The school's collective efforts often reinforced a climate of skepticism and resistance. In this school culture, teacher leadership played a secondary role.

Creating a Common School Culture

Cultural values also impacted what occurred at these schools, serving as an attractor that shaped faculty beliefs and practices (Gilstrap, 2005). For SCS teachers, the ideals embodied in DREAM BIG offered a touchstone against which to judge their professional work while providing Helen with a lens for assessing whether faculty used power she entrusted in them in productive ways. In decentralized networks, having been accorded power and authority, opportunities for SCS faculty to collectively enact, refine, and reinforce school culture were iterative and redundant (Lemke & Sabelli, 2008). They were school routines routinely enacted and fully aligned with Buell and Cassidy's (2008) assertion that "The more levels of the system the policy affects, the more likely it is the policy will have a sustained effect" (p. 8). Helen spoke to this very issue, saying her DREAM BIG policy "created a common language. . . . a common discipline policy. Out of this has come a parent accountability contract. I have [used these ideals to help] decrease tardiness." In this instance, a common school culture impacted multiple aspects of the SCS system.

Harold also promoted a common school culture. Encouraging faculty to see themselves as "crew not passengers," he shifted how teachers conceptualized their work, as they embraced new roles and responsibilities, though overall he entrusted faculty with limited autonomy. Further, this ideal never impacted classroom teaching. Neither did faculty ever embrace

Harold's "100 percent proficiency" goal. Lacking a common belief system, the networks created to empower teachers proved risk-averse and ineffective in shaping classroom teaching. The school's "collective conceptual orientation" (Bowers & Nickerson, 2001) remained largely unchanged—the principal was in charge and faculty maintained control of classroom autonomy.

Concluding Remarks

As these case studies reveal, complexity theory offers a framework for understanding interactive system dynamics acknowledged by a variety of leadership theories as central to educational change (Lichtenstein et al., 2006). Initial conditions, network generation as a means to promote relational trust, and creating a shared school culture clearly intertwine. For change to emerge, something must disrupt the status quo. To address the consequent shift in power dynamics, networks offer an adaptive mechanism, one that can enhance trust throughout a school. And as people enact new-found power in a changed context, a common school culture offers a means to guide their thinking and actions. Each school exists as a whole that is greater than the sum of its parts, and as a fabric of relationships involving the interior characteristics of individuals and the exterior demands of overlapping structures and systems. Systems grow as people grow, and fundamental "systems change" is an adaptive process that requires sustained effort over time (Wagner & Kegan, 2006).

Ideally, as Charles Reigeluth (2008) maintained, "an educational system should coevolve based on the evolving values, beliefs, and visions of the community and on the evolving educational needs of the community" (p. 26). We cannot reduce school outcomes to leadership behaviors, but it is at the point of intersection between individual leadership and collective complexity that these studies reveal meaningful patterns. Helen's brand of "transformational leadership," grounded in collective engagement and common purpose, when contrasted with Walter's reliance on a more "transactional leadership," dependent on a desire for control, goes a long way toward explaining the divergent outcomes of these two schools (Daft & Lengel, 1998). As David Bower (2008) reminds us, "Renewal, sustained change, growth, and creativity emerge from within. We cannot create these qualities by fiat or by devising lists of goals and objectives. We can, however, help to create the conditions that allow for these qualities to emerge" (p. 110).

References

Alsbury, T. L. (2008). The crucible of reform: The search for systemic leadership. In Despres, B. (Ed.). *Systems thinkers in action: A field guide for effective change leadership in education (pp. 77-99).* Lanham, MD: Rowman & Littlefield.

Axelod, R. & Cohen, M. D. (1999). *Harnessing complexity: Organizational implications of a scientific frontier.* New York: Free Press.

Baker-Doyle, K. J. & Yoon, S. A. (2010). Making expertise transparent: Using technology to strengthen social networks in teacher professional development. In A. J. Daly (Ed.), *Social network theory and educational change (pp. 115-126).* Cambridge, MA: Harvard Education Press.

Bambrick-Santoyo, P. (2010). *Driven by data: A practical guide to improve instruction.* San Francisco, CA: Jossey-Bass.

Bathhurst, R. & Monin, N. (2010). Shaping leadership for today: Mary Parker Follet's aesthetic leadership. *Leadership, (6),* 115-131.

Beabout, B. (2012). Turbulence, perturbance, and educational change. *Complicity, 9*(2), 15-29.

Borgatti, S.P. & Ofem, B. (2010). Overview: Social network theory and analysis. In A. J. Daly (Ed.), *Social network theory and educational change* (pp. 17-29). Cambridge: Harvard Education Press.

Bower, D.F. (2008). Leadership and the self-organizing school. In Despres, B. (Ed.) *Systems thinkers in action: A field guide for effective change leadership in education*. Lanham, MD: Rowman & Littlefield.

Bowers, J. S., & Nickerson, S. D. (2001). Identifying cyclic patterns of interaction to study individual and collective learning. *Mathematical Thinking and Learning, 3*, 1–28.

Boynton, A. & Fisher, B. (2011). *The idea hunter: How to find the best ideas and make them happen*. San Francisco, CA: Jossey-Bass.

Branch, G.F, Hanushek, E.A. & Rivkin, S.G. (2013). School leaders matter: Measuring the impact of effective principals. *Education Next, 13(1)*, 1-8.

Bryk, A. S. & Schneider, B. (2002). *Trust in schools: A core resource for improvement.* New York, NY: Russell Sage Foundation.

Buell, M. J. & Cassidy, D. J. (2001). The complex and dynamic nature of quality in early care and educational programs: A case for chaos. *Journal of research in childhood education, 15*(2), 209-221.

Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In N.K. Denizin & Y.S. Lincoln (Eds.), *Handbook of qualitative research,* 2nd edition. Thousand Oaks, CA: Sage Publications.

Cilliers, P. (1998). *Complexity and Postmodernism*. New York, NY: Routledge.

Coburn, C.E. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis, 23*(2), 145-170.

Coburn, C.E., Choi, L. & Mata, W. (2010). "I would go to her because her mind is math":

Network formation in the context of a district-based mathematics reform. In A. J. Daly (Ed.), *Social network theory and educational change* (pp. 33-50). Cambridge: Harvard Education Press.

Daft, R. L. & Lengel, R. H. (1998). *Fusion leadership: Unlocking the subtle forces that change people and organizations*. San Francisco, CA: Berrett-Koehler.

Daly, A. J. (2010). Mapping the terrain: Social network theory and educational change. In A. J. Daly (Ed.), *Social network theory and educational change (pp. 1-16)*. Cambridge: Harvard Education Press.

Davis, B. & Sumara, D. (2001). Learning communities: Understanding the workplace as a complex system. *New Directions for Adult and Continuing Education*, 92, 85-95.

Davis, B. & Sumara, D.J. (2005). Challenging images of knowing: Complexity science and educational research. *International Journal of Qualitative Studies in Education, 18*(3): 305-321.

Davis, B. & Sumara, D.J. (2006). *Complexity and education: Inquiries into learning, teaching, and research*. New York: Routledge.

Davis, B. & Sumara, D. J. & D'Amour, L. (2012). Understanding school districts as learning systems: Some lessons from three cases of complex transformation. *Journal of Educational Change, 13* (373-399).

Denis, J-L., Langley, A. & Sergi, V. (2012). Leadership in the plural. *The Academy of Management Annals, 6(1)*, 211-283.

Despres, B. (Ed.) (2008). *Systems thinkers in action: A field guide for effective change leadership in education*. Lanham, MD: Rowman & Littlefield.

Elmore, R. (2000). *Building a new structure for school leadership*. Washington, DC: Albert Shanker Institute.

Elmore, R. (1996). Getting to scale with good educational practice. *Harvard Educational Review, 66*(1), 1-25.

Evans R. (1996). *The human side of school change: Reform, resistance, and the real-life problems of innovation.* San Francisco, CA: Jossey-Bass.

Fullan, M. (2001). *Leading in a culture of change.* San Francisco, CA: Jossey-Bass.

Fullan, M. (2004). *The future of educational change: System thinkers in action*. Paper presented at the American Educational Research Association annual meeting.

Fullan, M. (2005). *Leadership and sustainability: System thinkers in action*. Thousand Oaks, CA: Corwin Press.

Fullan, M. (2007). *The new meaning of educational change*. New York, NY: Teachers College Press.

Gee, J. (1996). *Social linguistics and literacies: Ideology in discourse*s. London: Taylor &
Francis.

Geertz, C. (1973). *The interpretation of cultures.* New York: Basic Books.

Gilstrap, D. (2005). *Leadership and strange attractors: Metaphor, shared vision, and scenario-building in complex organizations.* Paper presented at the American Educational Research Association Meeting, Montreal, Canada.

Goldstein, J., Hazy, J. K. & Lichtenstein, B. B. (2010). *Complexity and the nexus of leadership: Leveraging nonlinear science to create ecologies of innovation.* New York, NY: Palgrave Macmillan.

Grissom, J. (2011). Can good principals keep good teachers in disadvantaged schools?: Linking principal effectiveness to teacher satisfaction and turnover in hard-to-staff environments. *Teachers College Record, 113*(11), 2552-2585.

Hallinger, P. (2011). Leadership for learning: Lessons from 40 years of empirical research. *Journal of Educational Administration, 49*(2), 125-142.

Halpern, B. L. & Lubar, K. (2003). *Leadership presence: Dramatic techniques to reach out, motivate, and inspire*. New York: Penguin Books.

Hargreaves, A. (2001). *Changing teachers, changing times: Teachers' work and culture in the postmodern age*. New York: Teachers College Press.

Hargreaves, A., & Fink, D. (2006). *Sustainable leadership*. San Francisco, CA: Jossey-Bass.

Hargreaves, A. & Fullan, M. (2012). *Professional capital: Transforming teaching in every school.* New York, NY: Teachers College Press.

Heifetz, R. (1994). *Leadership without easy answers*. Cambridge, MA: Harvard University Press.

Heifetz, R. & Linsky, M. (2002). *Leadership on the line: Staying alive through the dangers of leading*. Cambridge: Harvard Business School Press.

Hemmings, A. (2012). *Urban high schools: Foundations and Possibilities.* New York, NY: Routledge.

Hess, F. (1999). *Spinning wheels: The politics of school reform.* Washington DC: Brookings Institution.

Hill, C.E., Thompson, B.J., & Williams, E.N. (1997). A guide to conducting consensual qualitative research. *The Counseling Psychologist, 25(4):* 517-572.

Hoban, G. (2002). *Teacher learning for educational change*. Philadelphia, PA: Open University Press.

Johnson, S. (2001). *Emergence: The connected lives of ants, brains, cities, and software*. New York: Touchstone.

Joyce, B. & Showers, J. (1995; 2nd Ed.) *Student achievement through staff development*. White Plains: Longman Publishers.

Kohm, B. and Nance, B. (2009). Creating collaborative cultures. *Educational Leadership, 67*(2): 67-72.

Larsen-Freeman, D. (1997). Chaos/complexity science and second language acquisition. *Applied Linguistics*, 18, 141–165.

Leithwood, K., Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning.* New York: The Wallace Foundation.

Lemke, J. L. & Sabelli, N. H. (2008). Complex systems and educational change: Towards a new research agenda. *Educational Philosophy and Theory*, *40*(1): 118-129.

Lewin, R. (1999). *Complexity: Life at the edge of chaos.* Chicago: University of Chicago Press.

Lichtenstein, B.B, Uhl-Bien, M., Marion, R., Seers, A., Orton, J.D. & Schreiber, C. (2006).Complexity leadership theory: An interactive perspective on leading in complex adaptive systems. Emergence: Complexity and Organization, 8(4), 2-12.

Lichtenstein, B. B., & Plowman, D. A., (2009). The leadership of emergence: A complex   systems leadership theory of emergence at successive organizational levels. *The   Leadership Quarterly*, *20*(4): 617-630.   doi:10.1016/j.leaqua.2009.04.006.

Lynch Leadership Academy. (2011). Lynch Leadership Academy Mission and Vision. Lynch School of Education: Boston College.

Martin, K. (2004). Leadership in living organizations. Paper presented at the annual meetings of the American Educational Research Association, San Diego, CA.

Meadows, D. (1999). *Leverage points: Places to intervene in a system.* Hartland, VT: The Sustainability Institute.

McLaughlin, M.W. & Talbert, J.E. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement.* New York, NY: Teachers College Press.

Moolenaar, N.M. & Sleegers, P.J.C. (2010). Social networks, trust, and innovation: The role of relationships in supporting an innovative climate in Dutch schools. In A. J. Daly (Ed.), *Social network theory and educational change (pp. 97-114)*. Cambridge: Harvard Education Press.

Nadler, R. (1993). Therapeutic process of change. In *Adventure therapy: Therapeutic applications of adventure programming*, M. Glass (ed.), Dubuque, IA: Kendall/Hunt Publishing, pp. 57-69.

O'Day, J. (2002). Complexity, accountability, and school improvement. *Harvard Educational Review*, *72*(3), 293-329

Opfer, V. D. & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, 81(3), 376-407.

Payne, C. (2008). *So Much Reform, So Little Change: The persistence of failure in urban schools.* Cambridge, MA: Harvard Education Press.

Reigeluth, C. M. (2004). *Chaos theory and the sciences of complexity: Foundations for transforming education.* Paper presented at the annual meetings of the American Educational Research Association, San Diego, CA.

Reigeluth, C.M. (2008). Chaos theory and the sciences of complexity: Foundations for transforming education. In Despres, B. (Ed.), *Systems thinkers in action: A field guide for effective change leadership in education*. Lanham, MD: Rowman & Littlefield.

Rothstein, R. (2004). *Class and schools: Using social, economic, and educational reform to close the Black-White achievement gap.* New York, NY: Teachers College Press.

Saphier, J. & King, M. (1985). Good seeds grown in strong cultures. *Educational Leadership*, *42*(6): 67-74.

Sarason, S.B. (1971). *The culture of the schools and the problem of change*. New York, NY: Teachers College Press.

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J., & Kleiner, A. (2000). *Schools that learn: A fifth discipline fieldbook for educators, parents, and everyone who cares about education.* New York, NY: Doubleday.

Sergiovanni, T. (1984). Leadership and excellence in schooling. *Educational Leadership, 41*, 4-13.

Short, P. M., & Spencer, W. A. (1990, Winter). Principal instructional leadership. *Journal of Research and Development in Education, 23(2)*, 117–122.

Spillane, J., Halverson, R, Diamond, J. B. (2001). Investigating school leadership: A distributed perspective. *Educational Researcher, 30*(3), 23-28.

Spillane, J., Reiser, B. J., & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research, 72*(3), 387-431.

Spillane, James (2005). Distributed leadership. *The Educational Forum 69(2), 143-150.*

Stacey, R. D. (1996). *Complexity and creativity in organizations*. San Francisco: Berrett-Koehler Publishers.

Stake, R. (2006). *Multiple case study analysis*. New York, NY: Guilford Press.

Stillman, J. (2011). Teacher learning in an era of high-stakes accountability: Productive tension and critical professional practice. *Teachers College Record 113*(1), 133-180.

The Equity and Excellence Commission. (2013). *For each and every child: A strategy for education equity and excellence*. Washington, DC.

Uhl-Bien, M. & Marion, R. (2009). Complexity leadership in bureaucratic forms of organizing: A mess model. *The Leadership Quarterly, 20*, 631-650.

Wagner, T. & Kegan, R. (2006). *Change leadership: A practical guide to transforming our schools*. San Francisco, CA: Jossey-Bass.

Wallace Foundation. (2011). *The school principal as leader: Guiding schools to better teaching and learning.* New York, NY: The Wallace Foundation.

Wheatley, M. J. (1999). *Leadership and the new science: Discovering order in a chaotic world.* San Francisco, CA: Berrett-Koehler Publishers.

About the Author/s

Brad Kershner is a school leader and educational scholar working at the intersection of leadership, policy, and social justice. He served as Primary School Director at Conservatory Lab Charter School, and is a doctoral candidate at the Lynch School of Education at Boston College. His areas of interest include leadership in complex systems, early childhood education, and cultural transformation beyond the parameters of neoliberal discourse. Recent publications include: *Guiding emergence: Understanding cultural change in an urban Catholic school* and *The opposite of a great lie: Racism, capitalism and education policy.* You can follow him at brad@bradkershner.

Patrick McQuillan, a cultural anthropologist, is an Associate Professor in the Lynch School of Education at Boston College. His current research interests focus on educational change, with an emphasis on school reform in urban contexts and the role of the principal in orchestrating educational change. His publications include *Reform and Resistance in Schools and Classrooms: An Ethnographic View of the Coalition of Essential Schools* (Yale University Press, 1996; co-authored with Donna Muncey) *and Educational Opportunity in an Urban American High School: A Cultural Analysis* (SUNY Press, 1998).