UNDERSTANDING CHANGE DYNAMICS: EXAMINING THE UNDERLYING PATTERNS THAT SHAPE ORGANIZATIONAL CHANGE

by

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DEDICATION

For my family, who inspires and uplifts me in countless ways especially my daughters, Regan and Riley, who remind me of the importance of balance.

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ABSTRACT

Most organizations strive for improved performance, yet often these efforts fail to generate the expected results. Rather than focusing on specific tools and techniques for increasing efficiency, this research presents three studies that examine patterns in the way that employees perceive and enact change. Each study highlights a different pattern that contributes to change processes and outcomes through comparative case analysis.

These studies redirect attention from external programs of change to the internal processes of translating and integrating change within the organization. I propose that the reason that improvement efforts fail is because organizations fail to attend to the underlying meanings, beliefs, and behaviors that shape change processes and outcomes. This research makes three primary contributions. First, it develops an understanding of how patterns of discourse produce meanings that can either inhibit or promote change. Two distinct patterns are identified and their implications are discussed. Second, it extends a methodology developed in the field of cognitive anthropology to studies of organization development and change. Cultural consensus analysis (CCA) is a set of statistical procedures that can be used to objectively examine shared values, and the findings demonstrate that this methodology can be used to assess alignment between organizational culture and a desired program of change. The final study links planned and emergent theories of change to examine how organizations can foster a system of continuous improvement. While most studies treat planned and emergent change as dichotomous approaches, few have explored how both approaches simultaneously contribute to change outcomes.

Chapter 1
Introduction

The popularity of operational excellence programs implies that they can create real value for firms, yet most companies fail to unlock their potential (Ashkenas, 1994; Staw & Epstein, 2000; Sirkin, Keenen, & Jackson, 2005). Over the past three decades, management systems known by a variety of names (e.g. Toyota Production System, lean production, Six Sigma, lean Six Sigma, and continuous improvement) have received extensive attention for their ability to boost productivity. Organizational successes are accompanied by an onslaught of informational articles, how-to books, and discussion blogs that facilitate the rapid dissemination of information about these work systems. Despite the widespread availability of information on operational excellence programs, most organizations still struggle to translate new management practices into sustainable improvements.

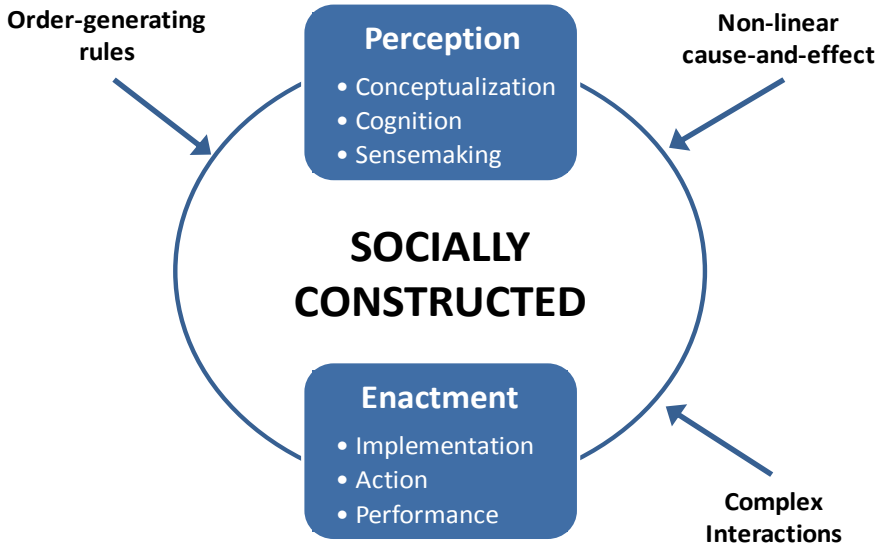
While the intent is to reinvest in the company through systematic improvements, often organizations sink time, money, and effort into change initiatives that yield limited returns. These failures have broader implications as well. Management practices that have the capacity to transform businesses fall out of favor as companies become disillusioned with the ability of these systems to solve problems (Abrahamson, 1991; Ettorre, 1997). Future implementation efforts are also jeopardized as employees grow weary of the revolving door of change activities. Frequently new initiatives contain core elements of old management fads that are repackaged with different terminology (Gibson & Tesone, 2001), and cynicism builds as employees recognize familiar elements from failed past initiatives.

Despite the risks associated with failure, organizations can't stand still as the rest of the world continues to evolve. With the downturn in the global economy and the rise of globalization, consumers are even more selective. Firms compete to provide goods and services that meet increasingly higher standards of quality, cost, and performance.

Not only do operational excellence programs hold the promise of increased productivity, but they may also enhance a firm's legitimacy as they become widely adopted and institutionalized (Meyer & Scott, 1983). Organizations that fail to adapt in response to the emergence of new management approaches may jeopardize their survival.

The purpose of this research is to explore the underlying factors that contribute to the successful and unsuccessful adoption of operational excellence programs. I propose that the reason many organizational change initiatives fail is because employees fail to attend to how enduring behaviors, beliefs, and meanings shape the way change is perceived and enacted within their organization. Organizations are dynamic systems that "can be understood by looking for patterns within their complexity, patterns that describe potential evolutions of the system" (Dooley, 1997). The key implication is that unless employees alter underlying organizational patterns, the effects will be cosmetic and transitory (Kanter et al., 1992). Figure 1-1 shows three key properties shaping the dynamic process of change. I discuss each of these in greater detail in the following section and link them to the core research questions that drove this study.

Figure 1-1 Organizational Change as a Dynamic Process



1.1 Research Questions

An organization can be thought of as complex system in which order emerges as a function of ongoing interactions. Organizational realities are socially constructed as employees interact over time in a variety of settings. Communicative actions establish,

maintain, and transform fundamental assumptions about organizing (Barrett el al., 1995). From this viewpoint, change involves interrupting conditioned meanings in order to open up new possibilities for action. This perspective motivates the following research question:

Research Question 1: How do patterns of discourse shape the processes and outcomes of organizational change?

Chapter 2 addresses this question through a longitudinal study of change within a single organization. I construct composite narratives to capture the shared understandings that employees developed across three levels of meaning: identity, relational, and ideational. Although the dominant narrative pattern inhibited change by reinforcing a coercive form of organizing, I also find evidence that it is possible to generate alternate narratives within this context that facilitate change.

Within complex systems, specific long-term outcomes are unpredictable, but order-generating rules govern behavior patterns and help maintain a sense of order (Brown & Eisenhardt, 1997; Burnes, 2005; Stacey et al., 2002). Order-generating rules can be formal specifications such as policies and procedures or informal expectations such as organizational values and norms. Even with these rules, behavior is indeterminate since employees have the ability to ignore or adapt them (Stacey, 1995). Complex systems are said to be in a state of bounded instability since order-generating rules set boundaries to limit variability. These rules are important because they provide insights into expected behavior patterns, but it is difficult to objectively assess implicit rules. In order to further examine the link between informal order-generating rules (i.e. organizational values) and planned change, I pose the following question:

Research Question 2: How can we assess the alignment between organizational values and strategic change?

Chapter 3 introduces a methodology to systematically assess shared values that has received very limited attention in studies of organization development and change. Cultural consensus analysis (CCA), which was developed in the field of cognitive anthropology, is a set of statistical procedures designed to generate insights into the pattern of shared beliefs. In this study, value orientation is first quantitatively evaluated using CCA, and then these findings are validated and expanded through a qualitative

analysis of employees' work roles and behaviors. The findings are discussed in light of their implications for managing organizational change.

The unpredictable nature of organizational outcomes also shifts the focus from linear cause-and-effect to patterns and their systemic implications (Stacey, 1995). The view of organizations as non-linear systems challenges traditional conceptualizations of management, which tend to emphasize linear cause-and-effect, top-down leadership, and command-and-control approaches (Beeson & Davis, 2000; Morgan, 1997) and suggests a need to rethink the role of management in leading change. Operational excellence initiatives are frequently introduced as top-down planned programs of change, which is consistent with traditional conceptualizations of management. By itself, this approach is inadequate for dealing with the uncertainties and unexpected outcomes produced by change, but planned and emergent change are typically presented at dichotomous approaches within the organization development and change literature. This observation motivates the final research question.

Research Question 3: How can organizations connect planned and emergent approaches to foster change?

Chapter 4 explores the interrelationships between planned and emergent change through a comparative case study of two organizations. The analysis treats "control" as a transitory outcome that evolves as change is unfolding to explore how both approaches simultaneously contribute to change outcomes. The primary research questions and their motivations are summarized in Table 1-1.

Table 1-1 Summary of Research Questions

Change Dynamics	Research Questions
Change is a function of social interactions.	1) How do patterns of discourse shape the processes and outcomes of organizational change?
Order-generating rules maintain order and govern behavior.	2) How can we assess the alignment between organizational values and strategic change?
Change is nonlinear.	3) How can organizations connect planned and emergent approaches to foster change?

1.2 Research Context

To answer these research questions, I focus on the adoption of an operational excellence program modeled after the Toyota Production System (TPS). TPS is a philosophy of continuous improvement that has been continuously refined by Toyota Motor Corporation over a period of more than 50 years and has been copied by organizations in a wide variety of industries around the world. TPS is commonly known by the term lean production, coined by Womack, Jones, and Roos (1990). Lean's focus on shortening lead time through the elimination of waste brings to the surface problems, which are systematically attacked by employees through collaborative problem solving. The essence of lean is not in the specific tools used to eliminate waste, but in the ways employees think about waste, problem solving, and people development (Spear & Bowen, 1999; Womack & Jones, 2003; Liker, 2004; Liker & Hoseus, 2007). Despite the widespread interest in TPS, other companies have failed to reach the same level of productivity as Toyota. Researchers have noted varying degrees of success with lean implementation not only between organizations but also within the same organization (Womack & Jones, 2003; Liker, 2004; Liker & Hoseus, 2007).

I study these variations through two industry case studies. Both cases involve manufacturing organizations that established top-down, continuous improvement initiatives modeled after TPS. The change programs were launched with the intent to transform processes, structures, and culture. Heavy Equipment (HE) produces equipment for industrial applications while Light Equipment (LE) produces equipment for use in homes and offices. HE launched its lean initiative in 2004 in an effort to drive organic growth. Senior managers created an internal continuous improvement (CI) organization to plan and implement the improvements. HE also hired two consulting firms to that periodically provided guidance during weeklong events that targeted rapid improvement. LE initiated its continuous improvement program in 1996 in response to mounting pressures that stemmed from rising costs and overdue orders. LE also established an internal CI organization to support change activities and received guidance from an outside firm. The company applied for assistance from the Toyota Supplier Support Center (TSSC), which is an organization established by the Toyota Motor Corporation to help North American firms adopt TPS. TSSC provided LE with an on-site mentor who

provided daily guidance over a period of five years. The setting for these two case studies is summarized in Table 1-2.

Table 1-2 Case Study Settings

	Heavy Equipment (HE)	Light Equipment (LE)
Products	Industrial	Home and Office
Start Date	2004	1996
Reason for change	Enable growth	Improve cost and delivery
Internal Support	CI organization	CI organization
External Support	Consultants	TSSC Mentor

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Chapter 2
The Paradox of Rational Management: Reproducing Bureaucracy in Narratives of Change

"It's like we've changed the landscaping, but the house is still the same. All we've done is change the appearance..." (July, 2006)

Leaders introduce new initiatives with the hope of generating some form of transformation within their organization, yet frequently these efforts only bring the vague disappointment of unmet expectations (Ashkenas 1994; Staw & Epstein 2000). Although the organization may realize incremental improvements, the promise of truly elevated performance remains out of reach. While a number of tangible differences may be apparent, the effects of these changes fail to seep below the surface level. I propose this gap is a function of the discourse about change.

This study examines how communication patterns shape the processes and outcomes of change by focusing on the shared assumptions that salaried employees jointly created in response to a new strategic initiative. Research was conducted at a manufacturing division of a *Fortune* 500 firm over a period of four years as it implemented a large-scale change intended to transform its core processes and culture. I capture shared understandings by constructing composite narratives of change using employee discourse. These narratives reflect the collective meanings that form the basis for employees' identities, interrelationships, and shared values. I find that well-intentioned managers who are embedded in a culture of bureaucracy coproduce rational patterns of discourse that ultimately destroy the transformational value they are trying to create. An overreliance on stability narratives (Sonenshein, 2010) reinforced traditional, bureaucratic forms of organizing that stifled creativity. I also find evidence that employees can develop alternate patterns of discourse to facilitate transformation even when working within a tightly controlled bureaucracy.

Bureaucratic forms of organizing emerged as the factory system drove the need for higher levels of efficiency. Managers needed new ways to coordinate and control

work activities, and Weber (1968) observed that the bureaucratic model is a rational and highly efficient approach to managing complexity. Under the traditional bureaucratic model, organizational hierarchy establishes authority and delineates supervisory span of control. Knowledge and power are centralized, and decisions are handed down from the top. While managers plan and segment work activities, operators carry out narrowly specified tasks. This specialization and division of labor ensures that each worker has clearly defined work responsibilities, but also creates separation between managers with formal authority, highly specialized professional workers, and the relatively unskilled laborers at the bottom of the hierarchy.

The narrow focus on internal structures and procedures within a traditional bureaucracy gave rise to the analogy of an organization as a machine with people, capital, and equipment as its parts (Shafritz & Ott, 1996). In this perspective, organizations perform in a routine, predictable manner when rules and formal procedures are used as controls to reduce variation and standardize the performance of work tasks. Improvements are made by trained professionals who use scientific inquiry to identify the one best way of organizing (Taylor, 1947). These improvements are then spread as "best practices" through the enterprise so that similar processes are standardized in the best known way. The job of the improvement specialists then becomes centrally controlling the process of change, the changes themselves, and deploying them as if they are modules to be plugged into the organization. This deterministic viewpoint assumes that all work practices are transferrable as self-contained bundles and doesn't consider interactions with other social and system components.

After a century of examining bureaucracies in action, researchers have noted that they are more complex and differentiated than Weber's initial description. Adler (1996, 1999) observed that a range of forms of organizing exist under the general category of bureaucracy. He uses the phrase "coercive bureaucracy" to describe the traditional form in which formal procedures ensure compliance and deskill employees who are only valued for their ability to follow instructions. While the rigid structure of a traditional coercive bureaucracy helps organizations maintain routines, it also makes them slower to adapt to changes. Adler also identified an alternate form, which he labels an "enabling bureaucracy," after observing Toyota Production System in practice at New United

Motor Manufacturing (NUMMI), a joint venture between Toyota and General Motors in Freemont, California. Enabling bureaucracies view "best practices" as templates that provide a source of ideas to decentralized work groups as they strive to improve their unique processes. Employees throughout the organization are responsible for capturing the currently known best way as standardized work and engage in problem solving to improve upon the existing routines. Many organizations have tried to reproduce this "enabling bureaucracy" through programs with various names like lean, Lean Six Sigma, operational excellence, and continuous improvement with varying degrees of success, but frequently the outcome is the creation of a new coercive bureaucracy (Kucner, 2008; Liker & Franz, 2011).

2.1 Change as Evolving Discourse

Interpretive research perspectives view change as evolving discourse that emerges as employees interact to reach mutual understandings. An organization is a socially constructed reality that is created and performed in the language and practices of its participants (Doolin, 2003). Communicative actions establish, maintain, and transform fundamental assumptions about organizing (Barrett el al., 1995). The essence of organizing doesn't lie in the physical setting, technologies, or hierarchal arrangements. Instead it emerges through interactions as individuals co-orient (Taylor & Robichaud, 2004) themselves around a common purpose. Communication forms the basis for perception and action as individuals establish order, exert control, foster collaborations, and explain the actions of themselves and others in discourse. In this characterization, an organization is an ongoing dialogue rather than an objective end state.

While no standard definition of discourse exists, I use it in the same sense that Alvesson and Kärreman (2000) term "Discourse," which emphasizes how social reality is constructed and maintained through dominant narratives that transcend localized variations. Narratives are formed by diverse systems of texts which incorporate verbal and nonverbal, formal and informal, and literal and symbolic forms of communication. Discourse analysis involves a structured examination of language, text production, communication processes, and situated interactions (Grant et al., 1998) to identify the underlying norms and understandings that shape how organizational members view and react to their surroundings.

The communication-as-constitutive perspective does not ignore the physical environment in favor of the purely symbolic. Social practice is inextricably linked to real, material social structures (Fairclough, 1992). Within communication, meanings are produced through the "dynamic interweaving of material and ideational worlds" (Ashcraft et al., 2009). Understanding discourses and their effects depends on an understanding of the context in which they arise.

Discourse is more than just a form of representation; it also is a mode of action that produces change. In discourse, shared meanings are continuously contested and refined over time. Intentional change, such as the adoption of new management practices or the implementation of a new strategic vision, involves directed attempts to transform the organization. From a mechanistic paradigm, this transformation involves changing the formal organizational structure and implementing new procedures and practices. In contrast, a discourse perspective views change management as a translation process whereby organizations adapt an initiative to their specific context and motivate organizational members to take action (Sevon, 1996). Organizational change entails more than simple duplication since meanings evolve in response to both pre-existing understandings and ongoing interactions within historical, political, and cultural contexts (Brannen, 2004). In other words, intentional change is a dynamic process that is shaped in communication as organizational members try to jointly reconcile a new initiative with their existing reality. Change outcomes are therefore a function of the conversations about changing (Ashcraft et al., 2009, Ford, 1999).

This perspective suggests a delicate balance exists between continuity and change which has not received a great deal of attention in the change literature (Pettigrew et al., 2001). Managers create interwoven narratives of stability and transformation to guide the process of change (Sonenshein, 2010). Planned change emerges as deliberate shifts in conversations and interactions produce a new, shared reality (Ford & Ford, 1995) within the broader network of conversations that constitute an organization (Ford, 1999). Change becomes meaningful when participants locate it in relation to ongoing streams of organizational discourse. As a result, discourse both creates and is constrained by social reality.

In this paper, I examine the tension between stability and change within a large organization that implemented a new initiative in an attempt to foster a new level of organizational excellence. My objective was to gain an understanding of how underlying patterns of discourse influenced a traditional bureaucracy's efforts to transform itself based on the principles of an enabling bureaucracy. The analysis examines this process from the viewpoint of multiple actors in the organization across different levels of meaning. Drawing on a typology introduced by Fairclough (1992), I focus on how discourse contributes to the (re)construction of three dimensions of meaning: identity, relational, and ideational. Using an interpretive perspective, I illustrate how collectively constructed meanings within these three dimensions shaped, and ultimately impeded, the efforts to implement planned change.

2.1.1 Identity

The identity dimension refers to how social identities are established through discourse. Social identities arise out of comparison and categorization as individuals co-create social order. As an example, the classifications of leader, team member, and subordinate represent three distinct identities that hold very different meanings for how individuals view themselves and their work role. When individuals participate in discourse, they speak and listen from one of a limited number of available subject positions, which shape perception and action (Foucault, 1972). Critical discourse theory focuses on the inherent imbalances of power among various social identities and how these power differentials affect the right to speak within a particular discourse (Parker, 1982; Potter & Wetherell, 1987). This reveals a complex dynamic in which individuals simultaneously create and are constrained by social identity. Within the context of planned change, two key questions emerge. How do participants conceptualize their role within a change process, and how does this identity influence change implementation?

2.1.2 Relational

The relational dimension encompasses how social relationships are enacted and negotiated in discourse. These understandings shape interactions and help establish the mechanisms of coordination and control. Rather than limiting this dimension to interactions among people and groups of people (Fairclough, 1992), I extend this concept

to include relationships people have with objects and structures. Objects have both symbolic and tangible properties that are invoked in conversation and shape interactions (Ashcraft et al., 2009). Certain entities (e.g. collectives, policies, ideologies, etc.) gain the power to "speak" when people mobilize their intent in communication (Cooren, 2008). In examining the process of planned change, my focus is on how these relationships are reconfigured in response to a change initiative.

2.1.3 Ideational

The ideational dimension refers to the ways discourse reproduces and transforms systems of knowledge and belief. Shared understandings act as a template for day to day organizational activity and facilitate a common interpretation of events. These understandings continue to evolve as organizational members learn how to effectively respond to uncertainty. Planned change destabilizes the status quo as organizational members are confronted with new ideas and practices. Within this context, I am interested in how employees make sense of the new initiative. This involves building consensus around the purpose and objectives of the change initiative.

2.2 Narrative Constructions of Meanings

Through narrative analysis, it is possible to analyze and link multiple levels of meaning construction (Riessman, 1993). Narrative analysis focuses on the stories that people construct to interpret events. These stories carry both implicit and explicit meanings about identities, relationships, and value systems. Since processes and social networks are sustained by people, information pertaining to participant roles and interactions form a critical component of narratives (Pentland, 1999). Furthermore, the moral context of narratives supplies standards for judgment (e.g. right and wrong, appropriate and inappropriate), which communicate cultural values (Pentland, 1999). As a result, narratives establish a sense of purpose and direction (Barry & Elmes, 1997; Gergen & Gergen, 1997) that guide the process of change.

Planned change leads to deep, as opposed to superficial change, when it stimulates a network of conversations that is significant enough to support it (Ford, 1999). Narratives create the framework to unite separate accounts and experiences into an interrelated whole (Polkinghorne, 1988). They are the mechanism for connecting the

past and present, self and others, and facts with their interpretation (Lawler, 2002). Temporal sequencing and context are frequently included as indicators to give meaning to events (Pentland, 1999). As employees develop shared understandings in response to a change initiative, new patterns of discourse emerge that form the backdrop for perception and action (Ford, Ford, & McNamara, 2002). When these patterns disrupt habituated meanings, they unlock new possibilities.

2.3 Reseach Setting & Methods

This study centers on a single-site case study. I use narrative analysis to examine how the identity, relational, and ideational dimensions of meaning are reshaped in discourse about planned change over time. I first discuss the case in detail, and then describe my data sources and methodology.

2.3.1 Case Overview and Selection

Heavy Equipment (HE)[1] is a division of large corporation involved in heavy equipment manufacturing for use in industrial settings. The division headquarters and a majority of its core manufacturing operations are located together at a single site. This research focuses on the implementation of a new strategic initiative within the supply chain organization at the division headquarters. Manufacturing operations at the headquarters are split into five major production plants, and each product family is essentially operated as an independent cost center.

The selection of a single case was driven by the desire to conduct a longitudinal study of change (Yin, 2009). This approach is a fitting response to the call for change research that attends to temporal and contextual factors (Pettigrew, Woodman, & Cameron, 2001). The ability to present a thick description (Geertz, 1973) of the case also reinforces the credibility of the data interpretation (Hansen, 2006). By focusing on a single site, I was able to collect an extensive array of data over an extended period of time. This rich data set facilitated a more nuanced study into the dynamic process of meaning creation during the implementation of a strategic change. HE was practically suited to my research objectives because they were undergoing a planned change with an

[1] All names are pseudonyms.

objective to transform all core processes and the culture of the organization, and I was able to obtain an unusually high degree of access to the company.

Change Program: Lean Production. In 2004, HE launched a "lean transformation program" as part of a corporate-wide initiative to support aggressive goals for organic growth. "Lean production" (Womack, Jones, and Roos, 1990) is an operational excellence philosophy that is based on the Toyota Production System (TPS), which continues to evolve over more than 50 years of development at the Toyota Motor Corporation. Lean's focus on shortening lead time through the elimination of waste reveals problems, which are systematically attacked by employees through group problem solving. This model has received widespread attention and has been copied in industries around the world.

Within Toyota, improvement tools and techniques are part of a larger system of learning and problem solving that is guided by Toyota's long term philosophy. Approaches are continually refined and replaced in response to new ideas and operating conditions (Spear & Bowen, 1999). These adjustments reflect ongoing interactions between a deeper system of meaning and the environment (Lander & Liker, 2007). The principles that underlie these tools guide thinking and bind the lean methodologies together. The implicit nature of this knowledge base presents a challenge to both companies that want to imitate Toyota and Toyota itself. As Toyota has rapidly grown its global operations, transferring and maintaining its core values has become more difficult. An internal company document, The Toyota Way 2001, is one attempt to make these values more explicit (Liker & Hoseus, 2008). A number of researchers have also tried to surface the deeper values and principles that are at the core of Toyota's work system (e.g. Liker, 2004; Liker & Hoseus, 2008; Rother, 2010; Spear & Bowen, 1999; Womack & Jones, 1996). Without an understanding of underlying TPS principles, companies struggle to adapt the Toyota system to novel situations (Lander & Liker, 2007). Sustainable change depends on an organization's ability to develop a Toyota-style system suited to their environment rather than an ability to replicate Toyota's methodologies.

While some attention has been giving to Toyota's seemingly paradoxical activities and results, little has been given to the paradox embedded within the philosophy that supports this high-performance system. In *The Machine that Changed the World,*

Womack et al. (1990) dispelled the myth that companies can either hold a low cost or high quality position within the market. They demonstrated how Toyota's lean methodologies turn out products with a higher first pass yield and at a lower cost than traditional mass production approaches. Lean's ongoing focus on the elimination of non-value added activities frequently involves counterintuitive approaches such as allowing machines to remain idle and slowing the rate of production to match customer demand in order to avoid the waste of overproduction (Liker, 2004). Other contradictions have been explored within Toyota's product development processes (Ward et al., 1995). Even though Toyota managers and engineers delay decisions until later in the design cycle and examine a greater number of prototypes than other Japanese and US automakers, their overall development cycle is shorter and less costly. Underlying these contradictory practices is a mindset that creates synergy between traditional tensions.

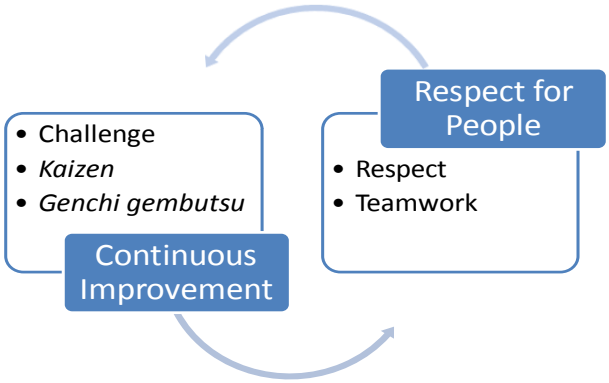
Although books and articles tend to emphasize how lean thinking is different from traditional management approaches, lean also embraces common management ideals such as efficiency, order, and profitability. Toyota's philosophy seeks a balance between paradoxical values, which seems to foster more a generative state of activity. Instead of holding opposing values in tension, they perceive mutually enhancing linkages between them. As a result, lean is a system that simultaneously values teamwork and individual accountability, creativity and efficiency, flexibility and structure, learning and profitability. At its core, lean emphasizes giving support to people so they can continually improve the processes they work on. These central beliefs are made explicit in an internal company document, *The Toyota Way 2001*. The purpose of this document is to help employees throughout Toyota's global operations develop a consistent understanding of Toyota's fundamental philosophies[2]. Without this mindset, managers can't lead in the true spirit of the Toyota Way. Figure 2-1 illustrates the core principles of the Toyota Way.

People are the heart of TPS, which is built on a foundation of respect and cooperative engagement in improvement activities. The fundamental belief in respect for people seamlessly weaves both collaboration and individual accountability. Within a system that

[2] Toyota discusses the purpose of this document along with their human resources approach on their corporate website: http://www.toyota.co.jp/en/environmental_rep/03/jyugyoin03.html.

strives for the elimination of process buffers, a sense of stability is achieved through the dedication of all employees to the continuous identification and implementation of process improvements (Liker, 2004). Joint problem solving drives these improvement efforts and advances both individual and team capabilities (Liker & Hoseus, 2008). While teamwork is an essential element of the Toyota Way, assuming personal responsibility demonstrates respect for others and helps build trust within the organization (Liker & Hoseus, 2008). Employees take individual ownership of the responsibilities outlined by their work role, but they also know they can rely on support from others when they encounter a problem. A common misconception about lean is that when a problem occurs, anyone who may be able to help responds to resolve the issue (Spear, 1999). Instead there is a specific structure for escalating the problem with specific individuals responsible to lead the response at each stage. This approach to problem solving illustrates a way of thinking that blends both teamwork and individual accountability.

Figure 2-1 Key Principles of *The Toyota Way 2001*



The second key element of the Toyota Way is continuous improvement. *Kaizen* refers to process of continuously improving operations while Challenge is the long term vision that guides these activities. *Genchi gembutsu* means going to the source to determine the facts of the situation. Within Toyota, managers focus on the means of improvement to achieve specific process outcomes (Rother, 2010). A guiding belief is that the right work practices will yield the desired results (Liker 2004). This requires sustained attention to how work is performed including the work content, sequence, and timing (Spear & Bowen, 1999). Ongoing, incremental improvements cumulatively

produce a large effect over time. Outcomes are not ignored. Because they are also highly specified, they act as signals to return attention to the process when performance goals are not met (Spear, 1999). In addition, target conditions specify short-term goals for how a process should operate and provide timely feedback as to progress in the desired direction (Rother, 2010). This way of thinking establishes a synergistic connection between outcomes and activities. The belief is that processes can't be improved without clear goals to guide problem solving while goals can't be achieved without sustained attention to how work is performed.

Case Background. Corporate headquarters positioned lean as a complement to the existing Six Sigma program, and this new focus was termed "Lean Six Sigma." Six Sigma is also based on systematic problem solving with a focus on reducing variation to improve process stability. Six Sigma's embedded belief system guides improvement activities. For example, process improvement is primarily the domain of individuals who have a certified level of expertise. Certification has a hierarchal structure with green belts at the lowest level, then black belts, and master black belts at the highest level. In principle, Six Sigma places a heavy emphasis on precision and clear financial results. Advanced statistical tools are used to quantify problems and determine if they have been solved. In addition, Six Sigma is structured as a project-based approach to process improvement. Six Sigma projects proceeds through five phases (Define, Measure, Analyze, Improve, and Control).

It is important to note that there are varying schools of thought on lean, Six Sigma and TPS. While some view lean and Six Sigma as complementary approaches that accelerate financial returns by combining speed and quality (e.g. George, 2002), others see Lean Six Sigma as a misinterpretation of TPS principles (e.g. Liker, 2004; Liker & Franz, 2011). This distortion arises as companies emphasize the use of tools for improvement and disregard the philosophy of developing people by engaging them in continuous improvement. Furthermore, with its focus on advanced statistical tools, TPS advocates argue that Lean Six Sigma is less accessible to the average worker who finds the calculations intimidating and instead becomes the domain of an elite group of "experts."

The adoption of lean within HE was presented as a way to simultaneously achieve greater productivity, quality and speed. I selected lean as the focus of this study because it represents a typical case (Miles & Huberman, 1994; Yin, 2009) of large-scale organizational change initiated as a top-down program to imitate a popular work system. This strategic initiative had the intent to transform not only technical processes, but also fundamental organizational structures and beliefs. Despite being a corporate initiative, HE had a high degree of latitude in deciding how to structure and roll out the new program. This approach mirrored previous management initiatives launched at the corporate level over the past two decades including Demand Flow Technology (DFT), Change Acceleration Process (CAP), and Six Sigma.

Within HE, several business factors contributed to senior management's support for the new initiative. Beginning in 2005, HE's main product line had to comply with tighter emissions standards set by the Environmental Protection Agency. HE developed a new product offering in response to these requirements, but the significant design changes increased material costs and labor hours. With the changeover to the new design in 2005, HE experienced an erosion of profit margins and a spike in missed customer commitments. Bringing costs and labor hours back in line with the previous model became a priority across the business. Another factor was the division's goal to more than triple revenue through globalization and expansion into adjacent markets over period of six years. At the start of the lean launch, HE had a large order backlog despite working three shifts in most areas. The business needed to create capacity with existing resources to support its organic growth goals. A final factor was the anticipated high attrition rate over the next few years. In 2005, operators had an average of more than 20 years of service. These workers had developed a deep understanding of the production processes over the years, but this tribal knowledge was largely undocumented. Unless this implicit knowledge was captured, it would be lost as employees retired. Senior management saw ways to address all three of these issues using lean tools and techniques.

HE developed a lean strategy centered on creating capacity and increasing capital efficiency to enable growth. The strategy targeted four key areas of improvement: waste elimination, product flow, visual management, and leveling the production of major

components. HE approached lean as a phased deployment. In Phase 1, lean activities were concentrated in a few areas of the company, and the lean leaders worked together to design and implement the first model production line. In Phase 2, the objective was to spread lean principles broadly and to apply the model line concept to other areas of the plant. I describe each of these phases in more detail in the following sections.

Phase 1: Model Line Development and Narrow Lean Focus (2004- mid-2006). With the launch of the lean initiative in 2004, HE formed a small group of employees, known as lean leaders, to design and implement the strategic change efforts. While Six Sigma remained part of the Quality organization, lean was instituted as a separate function within the Supply Chain organization. The lean leaders initially worked together to design and implement the first single-piece flow line for one of the major components. Prior to lean, almost all core components were assembled in static build stands from start to finish, and operators moved among the stands as the assembly steps were completed. Under the flow line concept, the assembly process was sequenced and evenly divided among progressive workstations. Production was paced by takt time, the rate of customer demand, which is calculated by dividing the available work time by customer demand. For example, a two-hour takt means a product or stage in the production process should be completed every two hours. Assembly operations in each workstation were expected to be completed within takt time so that each unit could be simultaneously advanced to the next workstation and a new unit started in the first workstation.

By the time the first flow line began operating at the beginning of 2005, both inventory and cycle time had been successfully reduced by 33%. Each lean leader was then redeployed to a different major component production line to plan additional flow lines and lead smaller workouts targeting material presentation, standard work development, and general workplace organization. Operations personnel were expected to drive progress on the first flow line. HE intended this line to be a model for how to manage and structure production in a lean environment, but a lean leader was reassigned to the model line at the end of 2005 because it began to regress. In April 2006, HE completed implementation of a second lean flow line, and over the next few months they began to accelerate efforts to spread lean across the organization. After a challenging

2005 with almost no growth in operating profit despite strong sales, HE rebounded in 2006. High demand for the new product design and a continued cross business focus on cost reductions drove a more than 40% increase in operating profit over the previous year. Within the corporation, HE was held up as a leader for lean implementation, and their high level lean strategy was featured in the company's 2006 annual report.

Phase 2: Lean Acceleration and Expansion (mid-2006 – 2008). In Phase II, HE created several new lean positions and made personnel changes with the intent to accelerate lean implementation efforts. The lean organization primarily grew through internal hires, and by the end of 2008 there were at least two lean leaders plus additional lean support staff driving improvement activities in every production plant. In addition to these positions, HE created two new roles to advance lean knowledge and build support for change. One role focused on lean education through the development of training materials and classes while the other targeted change facilitation through increased, formal communications and cultural interventions. In another effort to grow the lean knowledge base, the company recruited people from outside HE to fill key positions. In August of 2006, HE brought in a lean trainer from the corporate headquarters to manage the final assembly production plant. He had co-developed a majority of the lean training materials for the entire corporation and also had extensive experience leading training workshops across the entire company. Then in April of the following year HE hired a manager with both lean and operations experience from another division within the corporation to assume the lean leader role for the entire business.

Despite the broader focus on lean in Phase 2, improvements failed to translate to the ledger. While HE grew sales through expansion into international and adjacent markets and maintained a large backorder for their main product throughout 2007 and 2008, the business continued to work high levels of overtime and miss on customer commitments. "Despite real great things with lean to date… we have not effectively driven key financial metrics of margin (primarily labor variable cost productivity from lean) and cash (primarily inventory from lean)" (Senior mgr, email 1/31/09).

2.3.2 Research Methods

I use an embedded, single case study design to follow HE's efforts to implement lean manufacturing over a period of five years from 2004 through the end of 2008. A

case study approach is ideal for longitudinal research, and an embedded design allows for more extensive analysis across subunits (Eisenhardt, 1989; Yin, 2009). Case methodology is also appropriate when attempting to answer "how" questions and examining phenomena in context (Yin, 2009). I triangulate my finding with multiple data sources. This approach examines meaning construction from multiple perspectives while seeking convergence in the research findings (Green, Caracelli, & Graham, 1991).

Participant Observation. Throughout the study, I was employed as a lean analyst at the division headquarters. On-site field work was primarily conducted during four summers from 2005 to 2008. Each summer I supported a different production line, which enabled me to gather a broader perspective of the change efforts. Between my summer work assignments and other involvement with weeklong lean workouts and projects throughout the year, I was able to directly participate in lean activities within every product family. I also had the opportunity to attend lean training sessions and meetings on the overall strategy for lean implementation. Observations were written up as field notes.

Participant observation for this line of research is ideal for several reasons. Since change is a dynamic process, I am able to better detect the nuances of organizational transformation. In addition, being a member of the organization enhances my ability to capture an insider's view of the evolving interpretations of the change program and to simultaneously examine changes in both individuals and their setting. Another benefit of my role within the organization is that it reduces the reactivity of the organizational members being studied. Although other employees knew that I was conducting research, awareness of my role as a researcher faded into the background as I performed my regular work duties. Everyday work interactions comprise a significant portion of my observations.

Interviews. In addition to participant observation, I conducted 31 semi-structured interviews between June, 2006 and February, 2008. A semi-structured format provides a framework to facilitate comparisons among responses while still giving respondents flexibility in how they formulate their responses. I encouraged respondents to share personal stories and examples in order to capture discourses that were reflective of the broader social narratives about lean. The interviews focused on understanding

employees' work roles and impressions of the division's efforts to implement lean. The interview protocol (see Appendix A) was divided into three sections. Initial questions focused on the employees' work background and responsibilities. The second section asked employees to discuss their personal involvement with lean implementation and to reflect on the impact that lean has had on the way they perform their job. The final section assessed general attitudes towards the lean implementation. Interviews averaged about 50 minutes, and each was recorded and transcribed with the consent of the participant. I used "snowball" sampling to identify potential participants (Miles & Huberman, 1994; Patton, 2002). I asked the lean leader for each production area to identify everyone involved in the development and/or daily operations of the lean flow lines. Interview respondents included senior managers and lower level operations employees. The operations employee grouping consisted of middle managers, production line supervisors, operations support personnel, and lean change agents. I contacted potential participants individually through email to request an interview. A summary of the number of people interviewed during each phase of deployment and their work responsibilities can be found in Table 2-1.

Table 2-1 Summary of Interview Demographics

Job Function	Phase 1 2004 - 06	Phase 2 2006 - 08	Description
Operations Employees			
Operations Middle Manager	1	4	Responsible for line performance
Line Supervisor	3	6	Responsible for hourly operators
Operations Support	3	4	Materials, Quality, Human Resources, Productivity
Lean Leader/Analyst	2	5	Change agents for lean
Senior Manager	1	2	Operations, Business lean leader
Total	10	21	

Documents. I collected both internal and public documents related to the lean initiative. Internal documents include training documents, strategy presentations, emails, lean newsletters and project summaries. Public documents include articles, press releases, and union newsletters.

2.3.3 Data Analysis

I used employees' discourses to create composite narratives of the patterned meanings (Dunford & Jones, 2000; Sonenshein, 2010) that emerged over time in response to the implementation of lean. While some narratives are fully elaborated by a single individual or in a single instance of discourse, most unfold in pieces as different participants come together in a variety of settings (Boje, 2001). I identified these individual pieces of discourse and united them using the framework of a narrative.

Before beginning the analysis, the data was grouped in two ways. First, I split the study into two phases as described in the case overview, which allowed me to examine how socially constructed meanings evolved over time. Within each time period, I also separately examined the discourses produced by senior managers and lower level salaried employees in order to analyze how meanings varied within and across levels of the organization. Senior management narratives were constructed from communications produced by members of the leadership team who were involved in developing high level operations and lean strategies. This group includes the supply chain general manager, the business lean leader, and product family leaders. The second group, which is referred to as "operations employees," includes operations managers, production line supervisors, operations support functions, and lean change agents. I inductively derived codes for the identity, relational, and ideational levels of meaning as they emerged from the data. I used the software package, NVivo, to facilitate the coding process. I also wrote memos to help refine the coding process (Miles and Huberman, 1994). For each time period, I continued to iterate between theory and my data sources until I achieved convergence (Miles and Huberman, 1994; Yin, 2009). To further validate my findings, I sought feedback from colleagues and HE employees.

2.4 Findings

This section presents the discourse patterns that emerged at each level of meaning (i.e. identity, relational, and ideational) as employees made sense of the lean initiative. Throughout Phase 1 and Phase 2 the dominant set of narratives reaffirmed a traditional, coercive form of organizing. In contrast to this, during Phase 2 I found one workgroup that developed a divergent set of narratives, which fostered a more enabling form of organizing.

2.4.1 Dominant Narrative Pattern: Reproducing a Coercive Bureaucracy

I found that both senior managers and operations employees created identity, relational, and ideational narratives that reinforced bureaucratic rationalizations and preserved the status quo. Tables 2-2 and 2-3 summarize the key bureaucratic elements emphasized within each level of meaning and contain illustrative quotes from both senior managers and operations employees. Although these narratives varied slightly from Phase 1 to Phase 2, the core themes remained consistent.

Identity Narratives: Structure. These narratives emphasized how identity was determined by structure. Employees engaged in two forms of rhetoric that reaffirmed traditional bureaucratic identities. First, employees recreated an imbalance of power in which authority and decision-making ability was a function of the organizational hierarchy. Senior managers' job was to drive lean down through the organization while operations employees' job was to comply with the direction set by senior managers. A central piece of senior managers' strategy to establish a "lean culture" reinforced this approach with the goal of "having people who are our lean leaders be our next business leaders and [product family] leaders so they can drive lean from the top down" (Senior mgr 1). As one operations employee noted, "this has been pushed from the highest levels all the way through everybody" (Supervisor 3). Another operations employee described this process as "leading with the iron fist" (Lean 2). In keeping with this perspective, operations employees portrayed themselves as taking a submissive role in the change process. This idea is captured in the statement that lean is "driven by demand on a lot of the managers" rather than "from the heart" (Ops Support 3). Many operations managers and support staff described lean as an obligation. As one line supervisor explained, "You know you have to change... It's just you have to force yourself to want to do it I guess" (Supervisor 2).

This sentiment carried over into the Phase 2 identity narrative, but it wasn't as prominent. By this time lean was a well-established initiative, and this understanding had faded into the background of conversations about the ongoing change (Ford et al., 2002). There was little need to continue to elaborate this aspect of identity since operations employees understood that lean was another "top-down initiative" where "somebody above us is handing something down to us so that we can go and run with it" (Middle

Table 2-2 Analysis of Dominant Narratives using Phase 1 Interviews and Field Notes

Dimension of Meaning	Bureaucratic rhetoric	Illustrative Examples		
		Level	Quote	Source
Identity	Hierarchy of authority "We must comply with directives."	Senior Manager	Now it's driven more from the top down from the general managers to the [product family] leaders down to the lean leaders saying, "Hey, I want these projects done."	Interview 6/1/06
		SC Employee: Supervisor 1	Once the upper management buys into something, they say you're going to do it… We usually find a way to figure it out and get it done. It's painful in the beginning, but we eventually fall into line.	Interview 6/21/06
	Division of labor "Specialized functions are responsible for change."	Senior Manager	Lean leaders are right now driving the lean projects. In the future once the lines are up and running, the production people have to be those people who are lean trained, lean experienced, have that lean know-how, how to make change.	Interview 6/1/06
		SC Employee: Middle mgr	Lean people do leaning. Production people just get output. If lean team went away tomorrow, we wouldn't do any more lean.	Field notes 6/4/06
Relational	Control (Interpersonal) "Managers monitor task performance."	Senior Manager	All of the people that are running these flow lines get together for an hour every Wednesday or Tuesday with [the general manager] to go through what the issues are. That needs to continue where it's like we do with our cost out reviews. Once a week we get together to police the projects that we're working on. It needs to become part of the culture here.	Interview 6/1/06
		SC Employee: Supervisor 2	Basically I have about 20 people that work for me on the [lean] line, and it's just responding to issues, making sure people are doing their job, and making sure they're doing it safely. Keep up the quality. That's about it.	Interview 6/28/06

Table 2-2 (Continued)

Dimension of Meaning	Bureaucratic rhetoric	Illustrative Examples		
		Level	Quote	Source
Relational (continued)	Control (Human - Nonhuman) "Internal structures drive stability."	Senior Manager	I make sure the metrics set on these lines will drive lean as far as utilization. If we continue to have those as our metrics and utilize the other metrics that are driven around lean, then we will force them to learn what lean is and do the right thing.	Interview 6/1/06
		SC Employee: Supervisor 2	Once you go to lean, you can drive that out and force people to be accountable for their job. Like we say your workstation can be done in this amount of time so you better get it done.	Interview 6/28/06
Ideational	Maximize efficiency "Lean is crucial to the bottom line."	Senior Manager	Our need for capacity was huge and lean was the only way to get there.	Field notes 7/19/06
		SC Employee: Ops support 3	Why is a business in business? To make money. Why are we doing lean? To cut cost, which equals making money. That should be on the foremost, unless it's safety.	Interview 6/20/06
	Deterministic "We understand cause and effect."	Senior Manager	We've got our own special culture..., but we're always out looking for best practices. We don't want to be Toyota, but we want to steal this best practice.	Field notes 6/28/06
		SC Employee: Middle Mgr 1	The philosophy is there's something that's broken. Here's a toolset or a skill set that you can learn and go out and fix it.	Interview 7/5/06
	Explicit "We can see success."	Senior Manager	The business is letting us utilize the lean tools to move forward. If we need to spend money on construction to put a nice flow line in, go ahead... They want us to take those monumental steps to be able to utilize the lean tools to make changes in the business.	Interview 6/1/06
		SC Employee: Ops support 2	Lean, again what they strive for from what I can see is take the parts off the floor, take the racks off the floor. Make it look lean. That's what I think these guys think lean is.	Interview 7/17/06

Table 2-3 Analysis of Dominant Narratives using Phase 2 Interviews and Field Notes

Dimension of Meaning	Bureaucratic rhetoric	Illustrative Examples		
		Level	Quote	Source
Identity	Hierarchy of authority "We must comply with directives."	Senior Manager	We need to really accelerate our [lean] progress this year… I am done selling here. This is how we will lead, make sure you send the message that if people like the old traditional way, they can find a new place to work.	E-mail 1/21/08
		SC Employee: Lean 3	We get direction from the general manager, from the [operations] managers, from the [product family] leaders, from the lean managers and they're not always in line. They're not always the same message, and sometimes they're fundamentally different and so you have to weigh what's the right thing to do and balance them.	Interview 7/17/07
	Division of labor "Specialized functions are responsible for change."	Senior Manager	I'm ok with the "co-own" word, but not the "own" word. I'd say about 40% of lean team are in "own" roles. Their fellow operating managers aren't taking any ownership.	Field notes 3/18/08
		SC Employee: Supervisor 8	We have a couple of lean leaders. They spend all day thinking of the change and actually implementing the changes, and then I'll kind of sell it to the hourly workforce. I'll explain it to them, tell them the benefits, try to overcome any of their objections, at least to get them to buy in enough so even if it's a bad idea, I can still get the constructive feedback from them.	Interview 12/7/07
Relational	Control (Interpersonal) "Managers monitor task performance."	Senior Manager	One of the key things we have here is the ability to express an issue without a negative repercussion is lacking. I think in the lean culture, people should be talking about the issues, what gets in my way, and that should be the norm not what gets you scrutinized… So I think one of the challenging things would be get the [executive staff] into really thinking about a lean environment and not destroying what that means or driving people underground. They're going to have to change too.	Interview 11/29/07
		SC Employee: Ops support 5	At the end you don't want the finger pointing at you. That's a funny thing, but that's what drives us all. At least from a production standpoint, you can be slow, but as long as you're not the slowest, it's not that big of a deal. You never get noticed when you're in second to last, just when you're in last.	Interview 11/30/07

Table 2-3 (Continued)

Dimension of Meaning	Bureaucratic rhetoric	Illustrative Examples		
		Level	Quote	Source
Relational (continued)	Control (Human - Nonhuman) "Internal structures drive stability."	Senior Manager	We're trying to come up with an assessment for lean. We are using a very simple scorecard... [The general manager] is going to drive his operating team to do it. I think the scorecard is going to drive a lot more ownership where it needs to be.	Field notes 7/8/08
		SC Employee: Middle Mgr 4	Piecework motivated most of the people. When we went day work, there's nothing there to motivate them. You just have to go on individual work habits... If you were a good pieceworker, you're a good dayworker, but they have no measurement on them now and that's why we're trying to drive the standard work and takt times and stuff.	Interview 12/7/07
Ideational	Maximize efficiency "Lean is crucial to the bottom line."	Senior Manager	The ultimate metric is what? It's earning per share. That's our ultimate metrics. That's how we're measured. That's what drives us... You still have to make the connection that lean helps you do that. Lean make you more effective, more efficient, better stewards of capital, and all of those things help earnings. But when it comes down to crunch time, it's got to be there. You can't just talk the lean thing and not deliver performance.	Interview 10/24/07
		SC Employee: Supervisor 7	Lean brings the word efficiency to my mind. That's the first thing I think of when I think of lean.	Interview 11/29/07
	Deterministic "We understand cause and effect."	Senior Manager	Lean is not exactly rocket science. It's very common sensical so I don't think you need to be real astute to understand the concepts. They're fairly basic.	Interview 11/29/07
		SC Employee: Supervisor 9	A lot of the principles and stuff like that, it seems like just common sense. It's stuff that we've done before, but you might not beat down on like a *gemba* board or a lot of the terminology and the meanings they have.	Interview 2/14/08
	Explicit "We can see success."	Senior Manager	We made some very different, physical changes. One of the reasons we wanted to go do that is to show there was a physical change, that things weren't the same as they were yesterday, and to kind of get it in their heads culturally that there has been change and this isn't the same old thing.	Interview 11/29/07
		SC Employee: Lean 6	Success is the transformation from static build to lean lines and changing the ways we do batch and queue to flow.	Interview 10/5/07

mgr 4). As another operations employee stated, employees knew they were "expected to buy into it [lean] so you can't really complain about it" (Supervisor 8). The greater concern at this time was how to comply with frequently conflicting directives fromsenior management. Operations employees described feeling "frustrated" (Lean 3) and "pulled in the middle" (Middle mgr, field notes 6/6/07) as members of the senior leadership team each pushed a different agenda. Lean leaders' focus became to attempt to balance these competing demands, but this impacted project completion. Lean leaders were "getting all these different instructions and trying to make everyone happy, but they're not getting any closure" (Supervisor 8). Rather than assuming ownership of lean initiatives, operations employees created identity narratives in which they were reactive to authority figures.

This lack of ownership was repeated in the second identity narrative, which characterized lean as a special activity outside of daily operating responsibilities. This division was established at the beginning of Phase 1 with senior managers' decision to create a separate lean organization to drive change and was further communicated in their strategy documents. While senior managers defined the role of the lean leaders as to "develop lean strategies, implement action work outs, and drive culture change" (Lean strategy April, 2005), there was no mention of the role that the rest of the operations team would play in the lean initiative. There was also little discussion about how managers' work roles would change with the conversion from static build to flow lines. After construction was completed on the first one-piece flow line, salaried employees returned to work without any formal conversations about how their jobs would be different in this new environment. When asked to describe their work role, none of flow line supervisors included any mention of lean in their work responsibilities. With lean leaders stretched thin as they assumed responsibility for all of the improvement activities, lean was largely an event based activity rather than a process of continuous improvement. A majority of the changes took place when lean leaders assembled teams for weeklong events that were facilitated by an external consulting group. A line supervisor described this process. "[Lean leaders] will come into the area and do the initial analysis, they'll set up the lean events, they'll work the action items afterwards, but on the day to day lean stuff, I don't think anyone's really

doing anything" (Supervisor 1). Although the intent was to eventually transition the ownership of lean away from the lean leaders, this was very limited in Phase 1.

In Phase 2, senior managers developed new narratives in an effort to transition some lean responsibilities to operations managers and support staff. Formal communication and lean strategy documents highlighted the need "to change the culture and headsets" because not all of "leaders within operations… see yet, or believe yet, or understand yet" (Senior mgr, email 6/3/07). One of the "core thrusts" to accelerate lean during Phase 2 was migrating lean execution from periodic, large events to frequent, small problem solving workouts led by operations and hourly teams (Lean Strategy Sept, 2007; Supply Chain Growth Strategy May, 2008). In 2008, efforts to transform line supervisors' work role ramped up with the introduction of formal training on how to lead a lean line.

Despite these efforts, informal conversations continued to undermine these objectives. Senior managers held line supervisors accountable for output related metrics, such as advancing product on the flow line at the right time (i.e. takt time attainment), while lean leaders were pushed to deliver process improvements measured as cycle time reductions. These conversations strongly influenced operations employee identity construction. As one operations employee explained, "When I was a [line supervisor], I'd try to do it the lean way because I have a passion for lean, but at the same time I was more concerned about getting [product] out the door at the end of the day because that was what I was being judged on" (Lean 7).

During Phase 2, identity narratives continued to define change as the responsibility of lean leaders. Lean leaders assumed broad ownership of the lean initiative that included "strategy development for lean… and all the training and projects scoping, team leading and implementation" (Lean 6) while a majority of other operations employees continued to omit lean from descriptions of their work roles. Although change activities shifted from large-scale events to smaller and more frequent work outs as the lean initiative matured, closing out open action items and maintaining improvements remained a problem. Other operations employees didn't consider these types of activities to be an important aspect of their work role while lean leaders had less opportunity for personal follow-up as lean spread to more areas of the organization. As

one employee reflected on his experience participating in a week-long event to standardize material presentation and tooling, he commented, "We don't seem to set ourselves up for success. Once we had it out there, we really didn't turn the keys over to anybody or hang it on somebody to do this and it just evaporated" (Ops Support 7). In describing the effort to advance lean, one lean leader commented," After a while, it gets hard to keep pushing, pushing, pushing… I thought by now people would be more on board, but there hasn't been a single [lean] work out that I haven't organized" (Field notes 6/5/07).

Relational Narratives: Control. The dominant theme that emerged in relational narratives was control. As lean improvements altered the physical workspace and methods of production, senior manager and operations employee narratives focused on establishing and redefining mechanisms of control to drive the desired behaviors. Since employees were monitored and held accountable for performance against metrics, this was a key area of focus in Phase 1. As one senior manager explained, "I don't want to be doing the wrong thing because we have bad metrics, and we still have those" (Senior mgr 1). Part of senior management's strategy was to transition from traditional operations metrics to lean measures (Lean vision April, 2005; Senior mgr, Email 6/20/05). Senior managers also attempted to control employee behavior by creating new channels for oversight. The supply chain general manager established a new meeting to "measure the lean lines" and "help push ownership of lean to the functional side" (Field notes 5/19/06). In addition, senior managers closely monitored output on the lean lines. A middle manager described his regular interactions with senior management. "My general manager calls me like three times a week because we post on a daily basis to this CEO tracker thing… It's good. We're getting a lot of exposure, but if something is wrong, they want to know what happened" (Middle mgr 1).

One of the most significant changes initiated by senior management was the conversion from piecework to day rate compensation on the lean flow lines. With piecework compensation, operators were paid in proportion to the percent of standard output achieved. This conversion was viewed as a critical step to enabling lean operations and securing operator participation in process improvements (Lean Strategy April, 2005). Under the piecework system, improvements by production managers were

perceived to be a time study that would impact the standard resulting in a reduction in pay. Furthermore, piecework operators could each work at their own pace trying to maximize their individual pay, while on the lean flow lines each operator needed to follow a standard sequence of work steps at a pace set by customer demand. Management negotiated with the union for more than a year on the terms of the new compensation plan before the rate change was finally approved by a union membership vote in January, 2007. Operators were offered a pay rate that was higher than their average wages under the former piecework system. In exchange, operators were expected to adhere to lean precepts, which included following standard work, participating in process improvement activities, and scheduling vacation and time off.

With the transition away from piecework compensation in Phase 1, operations middle managers and line supervisors had to revise their traditional control narratives. Even though the official rate change wasn't approved until 2007, operators on the first flow line were guaranteed their average pay rate in the interim. Under the piecework system, line supervisors relied on money to motivate operators' output. With the day rate system, money could not longer be characterized as a primary control mechanism since the operators received the same wage no matter how much they produced. This placed the burden of control back on the supervisors who had "to force them [operators] to do anything beyond their job scope" (Supervisor 3). Supervisors modified their relational narratives to reflect the increased responsibility they felt to monitor operator activities. As one line supervisor explained, "With it [compensation] going to day rate, now it's a little more of what I call the babysitting of the employees" (Supervisor 1).

In Phase 1, operations employees' narratives also emphasized establishing control through oversight. For example, line supervisors described their main responsibilities as "to make sure people are doing their job and make sure they're doing it safely" (Supervisor 2) and to "supervise the manufacture of [product]" (Supervisor 3). Line supervisors primarily interacted with the operators to give directions and to respond when there was a problem that threatened to stop production. As a result, lean changes that affected their ability to remotely manage the line were not well received. One lean leader described this difficulty, "In order to effectively deal with people, it takes a lot of your time. A lot of managers don't want to deal with that… I'm sure you could change some

of the material around. They like that stuff. But to tell a guy that he's got to do step 9 before 10, that takes a lot of time and working through with people" (Lean 1).

In Phase 2, senior managers expanded the lean strategy to place greater emphasis on developing a lean culture, but their approach to culture change focused on reasserting control rather than facilitating employee development. One of the main strategy thrusts was a "back to basics" movement to reinstate hourly employee process discipline (Lean Strategy Sept, 2007; Supply Chain Strategy May, 2008). As one senior manager commented, "Lean is simple. The problem is getting people to follow changes" (Field notes 6/17/08). The back to basics drive revolved around the development of a set of rules for desirable lean behaviors (e.g. routine clean up and adherence to break times) to be enforced by middle managers and line supervisors. Senior managers also pushed line supervisors and operations leaders to spend more time on the shop floor and established regular lean line reviews on the shop floor lines to help reinforce this. These meetings were originally intended to be an opportunity for the senior staff to provide coaching, but they were used to "push leaders to get out more" (Lean Growth Strategy May, 2008) and "to ensure compliance and continuous improvement" (Corporate Lean review 11/18/07). During these meetings, senior managers probed for output results and were quick to offer solutions and give directives.

Although operations managers began to spend a greater percentage of their time on the shop floor in Phase 2, control was still a central theme of their relational narratives. They frequently depicted themselves as the enforcers of lean processes. "It's very difficult from a union standpoint to implement the lean processes, to make them stick, but we're not backing down. We're staying on it. We're trailing their break times. We're getting back to basics" (Supervisor 5). Line supervisors continued to spend most of their time on the floor monitoring tasks and "putting out the fires" (Supervisor 7). Although some operations employees could envision a future where they would spend more time on process improvements and preventative measures rather than "putting out fires," they spent a majority of their time on routine oversight tasks like "doing reports and counting stuff" (Ops support 5).

Ideational Narratives: Mechanistic System. Ideational narratives reflect the shared understandings that gave meaning to the lean initiative. HE employees co-created

ideational narratives about lean that characterized it as a mechanistic system of change. Through this bureaucratic rhetoric, lean was defined as a toolset to maximize efficiency, produce predictable outcomes, and visibly transform the organization.

Maximize Efficiency. In Phase 1, senior managers attempted to persuade employees to embrace change by creating a value story for lean that was based on its ability to eliminate waste, compress cycle time, and enable growth. Training documents featured several business examples that illustrated the benefits of lean and tied lean adoption to measurable outcomes. This narrative was readily accepted and elaborated since it aligned with the corporation's espoused values about results-driven meritocracy. Lean became "another term for efficiency" (Ops support 2), and this meaning reinforced the perception that the bottom line took precedence over lean. As one employee noted, "at the end of the day, everything we're hearing comes back to making money. You could be looking good on a lean scorecard and [the general manager] might pat you on the back, but as soon as he sees your finances he's still going to turn around and kick you in the butt about your finances" (Lean 2). Creating value in the short term became the priority since "output gets measured more than anything else" (Supervisor 1). The focus on efficiency also fueled concerns for job security as operators and some managers interpreted lean as "another way that the company is going to come in and cut heads" (Middle mgr 1).

In Phase 2, senior managers and operations employees continued to construct narratives that focused on achievement. Although lean remained a core initiative, "output overshadows the ability to do it right" (Ops support 7). Even on lean flow lines, "the bottom line is master schedule, master schedule, master schedule" (Supervisor 5). This created tension between the principles of lean and the actual work practices on the shop floor. As one operations employee noted, "We say we want to do the lean things, but then we fall behind schedule and that all goes out the door." (Ops support 5). The focus on results made employees reluctant to experiment and try new things because they couldn't afford to fail. As one senior manager explained, "It's hard to take big swings here because we're so dependent on hitting the numbers… I lost sleep over whether we ought to put this line in or not because it's such a big risk and if nobody buys into it or if we miss something or whatever, I could be onto my next career somewhere because we

would stop the business. There's a drive for change and we want to change, but don't fail" (Senior mgr 2). Senior managers placed lean narratives within the broader organization narratives to rationalize violations around lean principles. As one senior manager noted, "We're committed at [this corporation] to make our numbers. That's what we do." (Field notes 3/18/08). Another strategy used to rationalize these lapses was to reinterpret them as being acceptable. As an example, one senior manager explained, "I think Toyota at the end of the day would say that our job is to make money and deliver results for our shareholders and customers. Lean is about what we do at the beginning of the quarter not at the end. We need to set ourselves up right." (Field notes 3/25/08).

Deterministic. This narrative characterized lean as a simple set of tools that could be applied predictably. Lean tools were taught using a formulaic approach. Training documents defined the "lean journey" as "applying the right tools at the right stage" (Training slides 3/15/05), and the internal corporate lean website provided a numbered list of lean tools in their recommended usage order. As one lean leader explained, this structure was important because "there's so many tools available out there that you obviously can't initiate or institute all the tools at once so what ends up happening is you're on this natural progression of all these tools" (Lean 1). The key knowledge gap was perceived to be a lack of broad understanding of the lean tools and how they fit with other management tools like Six Sigma. One operations employee summarized this problem as, "Now we've got a bunch more tools. Now we've got to understand how to use one tool from one and another tool from the other and combine it so that we use a whole toolbox, and I think that's where we struggle as a business, getting that information to our managers." (Ops support 3). Lean improvements were structured using the Six Sigma DMAIC (define, measure, analyze, improve, control) framework, which encouraged a project based approach to improvement that "makes the project to utilize the tools and to overemphasize the packaging of data" (Senior mgr 1) and prevented lean leaders from "just doing what needs to be done and doing it right" (Lean 2).

While in Phase 1 it was more common to link lean and Six Sigma under the broad umbrella of process improvement and waste elimination, this narrative shifted in Phase 2. Operations employees further simplified their conceptualization of lean as they differentiated it from Six Sigma. Unlike the complicated statistical

methodologies underlying Six Sigma, lean was perceived as a "common sense" approach (Senior mgr 3, Middle mgr 5, Supervisor 9). Lean was about "finding a problem, fixing a problem, and keeping it from coming back" (Lean 3, Lean 4, Ops support 5, Supervisor 8). The lean narrative became more general as almost any positive change could be called lean. Lean was "just saying let's get better" (Ops support 5) and "if it isn't an improvement, then it wasn't really lean to begin with" (Supervisor 8). As a result, "you can kind of get away with making improvements. Just saying, we're going to clean up our work area and make it more effective, and that's easy" (Lean 7).

Explicit The final ideational narrative tied lean to tangible outcomes and visible results while ignoring deeper levels of change. The core of senior managers' overall lean strategy was to "convert all major component assembly areas to flow lines" (Lean Strategy April, 05). In describing the first model flow line, one operations employee commented, "They've taken cell manufacturing and turned it into an assembly line, and that's the only thing they've done as far as improving the processes" (Ops support 2). Appearance also continued to be stressed after the flow line was implemented. In describing his strategy for the lean line, one manager commented, "I have an idea of what I want the line to look like" (Middle mgr 1). Culture and people development took a backseat to physically changing the work areas around (Lean 2).

In Phase 2, employee narratives continued to define lean as physical transformation. Even though implementing a flow line "changed the whole landscape,… basically they're [operators] doing the same thing just in a different type of environment" (Middle mgr 2). This narrow focus created problems because in many cases the underlying structures and processes weren't put in place to support these changes. As one operations employee explained, "I look at the fact that we still have material shortages, and a lot of that has to do with the fact that our sourcing department hasn't been leaned… It's like we tried to reduce our inventory, but we haven't done anything to stabilize our inventory so we're seeing more and more parts shortages" (Lean 7). Although the lean strategy in Phase 2 included an expanded focus on culture and communication, these efforts were directed at developing the explicit knowledge of lean tools. Each month, the lean newsletter featured a different lean tool, and mandatory lean

training for both hourly and salaried employees focused on explaining core tools and defining key concepts.

2.4.2 Divergent Narrative Pattern: Creating an Enabling Bureaucracy

Within HE, I also found evidence that it is possible for an alternate narrative pattern to emerge within the context of a coercive bureaucracy. Rather than being carefully orchestrated by senior managers, a small group of lower level managers deliberately fostered new meanings within their workgroup to help employees redefine how to work together on a lean flow line. The narratives co-developed within this workgroup balanced the bureaucratic rhetoric of the dominant narratives with an enabling subtext. Instead of relying on formal authority, procedures, and objectives to enforce compliance, these structures provided a shared basis of understanding to engage employees in collaborative process improvements. One of the managers described this transformation as gradual process of "building person by person" through a series of "one-on-one conversations every day" (Supervisor 4).

In particular, there were three salaried employees who played a central role in the development of these enabling narratives. These three individuals proactively initiated new conversations and established new channels for open communication to involve employees in the lean initiative. One was the lean leader for this production area. After being hired into the lean role in the second quarter of 2006, he sought out more experienced lean leaders in order to learn about the problems they encountered with the initial lean flow lines. The lean leader then took steps to ensure the same issues didn't occur on this line. Another was the first-shift line supervisor, who spent time building active participation on the lean line. He had previously worked for another manufacturing company that had high levels of employee involvement. The third was the human resources manager, who spent a lot of time on the shop floor talking with operators in order to surface and address their concerns about lean.

The workplace dynamics on this line were noticeably different from other lean areas. As the CEO noted, this production line "is a great example of people who get it and are engaged in making lean work" (Field notes 8/22/07). Senior managers were excited about how this workgroup was performing and wanted to capitalize on the positive transformation taking place in this line. The team was beginning to operate in a way that

was consistent with senior management's vision for lean based on TPS, but this dynamic was disrupted when all three key players, in two cases as a result of their success, were transitioned into new roles.

The first disruption occurred when the human resources manager, who was in a temporary assignment, rotated to a new position. A few months later in mid-2007, the lean leader and line supervisor were both promoted in the hopes that this would help spread the workgroup's unique culture across the plant, but these changes failed to produce the intended effect. The lean leader filled an opening at the senior management level while the line supervisor became the lean leader for the area. After the lean leader transitioned into the senior operations management role, he reverted to a traditional management style and began to focus more heavily on output. Because he was now a position of authority, he considered his role to be "a managing job to make it happen" rather than "an influencing job" like his previous position (Lean 4). Moving the line supervisor into the lean leader role also impacted the workplace dynamic. He had chosen to take an active role in leading change and mentoring other employees, but after he transitioned none of the operations managers took over these activities. Within a short period of time, the dominant coercive rhetoric almost completely replaced the enabling narratives. I conducted interviews with members of this workgroup after the human resourced manager had moved to his new role, but before the lean leader and line supervisor transitioned into their new positions. Table 2-4 contains representative quotes to illustrate how members of this workgroup wove together traditional and enabling rhetoric to construct a divergent set of narratives before the key personnel changed roles.

Divergent Identity Narratives: Agency. While the initial drive for lean came from senior management, salaried employees in this workgroup viewed this as an essential source of support for the changes they wanted to create within their line. Rather than simply reacting to senior management directives, these employees built off the momentum established by senior managers and initiated conversations to broadly involve operators in the process of change and drive it from the ground up. In contrast to the dominant narrative pattern, they also constructed identity narratives which distributed ownership of change development and implementation across the operations team instead of being the sole responsibility of the lean leader. The lean leader described his efforts

Table 2-4 Analysis of Divergent Narratives using Phase 2 Interviews and Field Notes

Dimension of Meaning	Rhetoric	Illustrative Examples	
		Quote	Source
Identity	Traditional: Hierarchy of authority "We must comply with directives."	Definitely lean coming down from the leadership is key. I mean [our product family leader] supported it, and I see areas that don't have the support and there's a big difference when people know that their boss is measuring them to that.	Lean 4 7/20/07
	Enabling: Bottoms-up "We have the power to create."	We've grown in this department from the bottom up and that's why it's successful… There's much more involvement with the management and working together with the floor people to figure out what's good for all of us. It's a win-win situation, not management says you're going to do this and the employee is then forced into doing it.	Supervisor 4 8/7/07
	Traditional: Division of labor "Specialized functions are responsible for change."	I go into the individual areas and create the strategy for how we're going to build the line and then go implement the strategy so pretty vertically integrated there. And then all that is required, you know the construction plans to make sure all that is going. That was my primary role.	Lean 4 7/20/07
	Enabling: Shared ownership "Everyone is responsible for change."	There's a big difference also between supporting [lean] and driving it. I never had a problem with support. I think everybody said that's a pretty cool idea, but that's not good enough. You've got to get involved and make it happen and that's been a bigger struggle than getting people to support.	Lean 4 7/20/07
Relational	Traditional: Control (Interpersonal) "Managers monitor task completion."	If your customers are getting what they wanted and you're keeping them happy, you pretty much won't hear anything from our bosses. They kind of leave you alone then.	Supervisor 6 8/24/07
	Enabling: Support "Managers facilitate performance."	I think that anyone who enjoys being on the floor working with the operators and looking at the overall success of those operators... this would be a good job for them.	Ops support 4 8/9/07

Table 2-4 (Continued)

Dimension of Meaning	Rhetoric	Illustrative Examples	
		Quote	Source
Relational (continued)	Traditional: Control "Internal structures drive stability."	I think lean forces some disciplines that may have not been there.	Middle Mgr 3 9/6/07
	Enabling: Support "Internal structures promote intimacy."	I feel that it's my responsibility to make that line work, and if people can't hit the takt times that I established, then it's my responsibility to figure out why. I just feel that it's not always that they're not working hard enough. Maybe I didn't set it up right so you've really got to find what the root cause is and go address it. Not just browbeat people, but there are times you've got to just say we're comfortable with what we put in place.	Lean 4 7/20/07
Ideational	Traditional: Maximize efficiency "Lean is crucial to the bottom line."	Everything I was ever told about lean in all the meetings and trainings and all the things I've ever gone to is it's mainly about increasing capacity and space.	Supervisor 6 8/24/07
	Enabling: Flexibility "Lean builds capacity."	My job is to make their job easier in the sense of materials... Success for the operators for me is looking at their safety in the sense of lifting, push/pull, ergonomics and that aspect. Make sure that they don't get hurt and that they're able to handle the material in a safe way and an efficient way.	Ops support 4 8/9/07
	Traditional: Deterministic "We understand cause and effect."	I use the terminology of lean as common sense manufacturing. Call it what you want, but in my mind it's eliminating waste in the process and the ultimate goal is to cut your cost so you can make more money to survive.	Supervisor 4 8/7/07
	Enabling: Complex "Cause and effect are unclear."	We can learn how to go do kanbans and all that stuff and we'll eventually get good, but you can't teach that teamwork. You can't read that in a book. That's where I know we'll be successful if lean really breeds that type of environment.	Lean 4 7/20/07
	Traditional: Explicit "We can see success."	Let's organize their areas. In the beginning when [lean] was introduced, it was let's organize things. It was more about organization to help it be more efficient.	Ops support 4 8/9/07
	Enabling: Implicit "We can sense success."	We've got to get them [operators] on board. That's the biggest thing. We can do everything else. We can put the lean line in and it can be the most perfect thing in the world, but if you don't have the people with the right attitudes to actually accomplish it, it's never going to go anywhere.	Supervisor 6 8/24/07

to alter supervisors' role in lean from passive acceptance to active participant. "There's a big difference between supporting it [lean] and driving it. I never had a problem with support. I think everybody said that's a pretty cool idea, but that's not good enough. You've got to get involved and make it happen and that's been a bigger struggle than getting people to support" (Lean 4). This created a work environment in which the management team worked together to build support for lean. Another employee described this process in more detail. "We've grown in this department from the bottom up and that's why it's successful and why [the general manager] is energized when he comes down here… There's much more involvement with the management and working together with the floor people to figure out what's good for all of us. It's a win-win situation, not management says you're going to do this and the employee is then forced into doing it" (Supervisor 4). Throughout this process, managers set the direction for improvements while encouraging high levels of participation. As another operations employee explained, "The communication process in the beginning was very open before we did any kind of changes and getting a lot of their [operator] inputs. But [the lean leader] was good at drawing the line too to say now that we've got your inputs… here's what we're doing because this is the right thing to do" (Ops support 4). Rather than using his position of authority to impose decisions on the workgroup, the lean leader moderated discussions so a final decision could be made.

Divergent Relational Narratives: Support. While these managers emphasized the need to control and coordinate operating activities, they also worked to create a supportive dynamic within the workgroup to accomplish their objectives. With the external pressures placed on attaining scheduled output, monitoring task performance continued to be a priority. "I spend a lot of time making sure that we are making takt time, and if we're not then I certainly hear about it" (Supervisor 6). As they developed more intimate knowledge of the processes and operators on the line, these managers gained a better sense of when to push employees and when to pull back. As one manager explained, "I feel that it's my responsibility to make that line work, and if people can't hit the takt times that I established, then it's my responsibility to figure out why. I just feel that it's not always that they're not working hard enough. Maybe I didn't set it up right so you've really got to find what the root cause is and go address it. Not just browbeat

people, but there are times you've got to just say we're comfortable with what we put in place" (Lean 4). These new narratives required managers to change they way they worked. As one supervisor explained, "I have to spend much more time on the lean line itself because it's a very, very critical area now. I spend a lot more time with the employees that work on the lean line whereas before really I didn't have to say much to those guys… They pretty much came in, they made their piecework money, and they went home. I mean there were nights that I didn't even speak to those guys… You've got to kind of reschedule what you do and how you spend different parts of your day" (Supervisor 6).

Changing and maintaining these new relational narratives took continuous effort. The operations employees in this workgroup described an ongoing process in which they had to tune into others and address issues immediately. As one operations employee explained, "it's a confrontational process in getting employees bought into what we're doing today... that whole change process. It takes a lot out of you, and there are managers here that don't want to go through that, and I can't blame them. You've got to want to do it, and I think that's a key part, having that drive and motivation to want to change for change's sake" (Supervisor 4). Rather than allowing issues to fester, managers tried to challenge them directly. "If I'm walking down the avenue and you hear somebody talking bad about lean or doing something else, you have got to be able to… just kind of push your way in there and say, 'Oh, really? Why?'" (Ops support 6). These kinds of positive confrontations allowed them to create new opportunities for dialogue about lean and to bring underlying issues out into the open.

Divergent Ideational Narratives: Organic system. While the dominant ideational narratives that portrayed lean as a means to obtain efficient, predictable, and visible results were prominent in the discourses of this workgroup, they also expanded on these basic understandings to create a more complex characterization of lean. In addition to emphasizing that the "focus of lean is to create a completely efficient process" (Middle mgr 3), they broadened their definition of lean to incorporate more than just outcomes. As one employee explained, "You've got to meet your goals, and if we're not doing that we're failing. If you don't make sure our workforce is engaged, then we're failing there too" (Supervisor 6). While lean tools were characterized as being simple, the process of

getting employees to work together to transform the line was more difficult and time consuming. This workgroup made employee involvement a critical component of their narratives about lean. As another employee described, "There's nothing magical about the line. It's relatively simple… The key is involvement of the employees. And if you don't have that, then you're probably going to have a very unsuccessful project. You won't recognize your cost benefits" (Supervisor 4). In addition to broadening their understanding of lean to incorporate the people side of change, members of this workgroup also talked about the changes in culture and norms that had to accompany physical transformation. Lean changes frequently required a change in engrained employee practices. Even small changes like establishing standard material storage locations had larger implications. As one employee explained, "It's kind of a culture change because these guys [material handlers] are so used to being buried in that area that they just grab the part, find an open spot for it, and that's its new home" (Ops support 4). Employees described lean as a change in they way they worked. As one manager commented, "I want it [lean] to be a way a life rather than something… we're going to practice for a while and then go back to some of our old bad habits" (Middle mgr 3).

2.5 Discussion Section

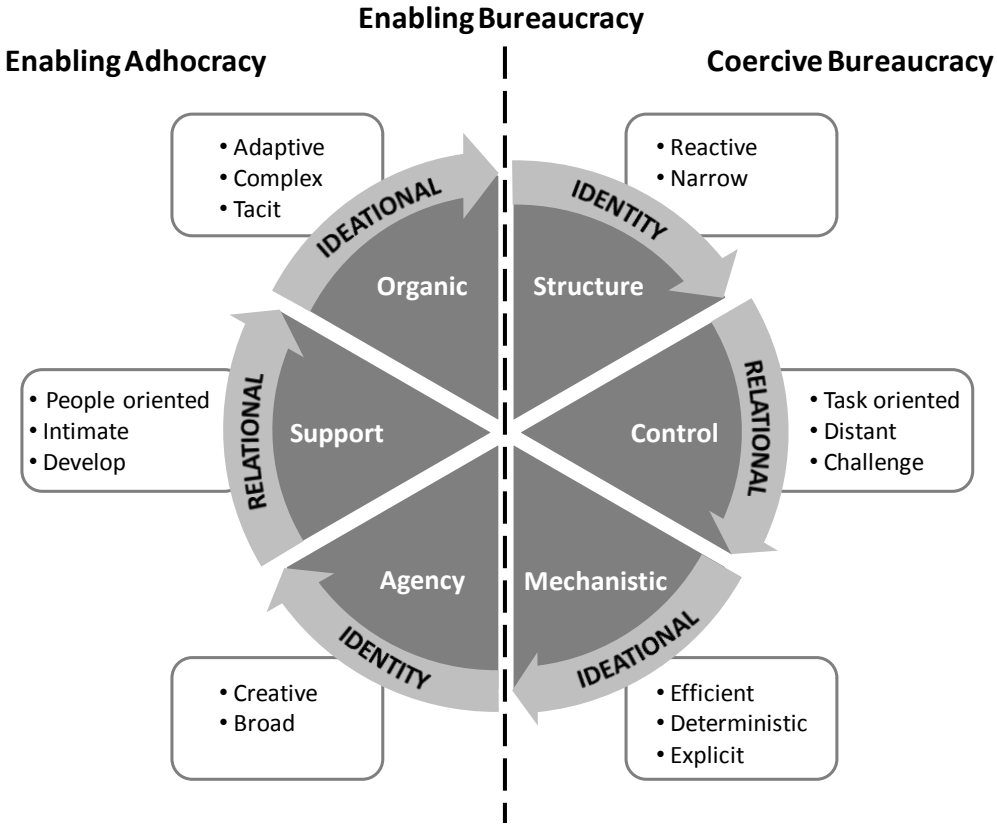
In creating composite narratives from senior managers' and operations employees' discourse about change, I have shown how employees jointly construct meanings that guide perceptions and behavior. My findings suggest that employees reinforce traditional patterns of organizing that promote surface level changes when they construct one-dimensional narratives of change. On the other hand, employees build the capacity for deep change when they develop multi-dimensional narratives that balance traditional tensions such as control and support. This study highlights the central role of discourse in the process of planned change and has implications for how managers can foster positive change.

2.5.1 Managing Paradox through Narratives

Organizational change surfaces latent tensions in the values that underlie identities, relationships, and culture (Smith & Lewis, 2011). Figure 2-2 illustrates the central paradox that emerged within each level of meaning as HE implemented lean. At

the identity level, the fundamental struggle was between structure and agency. A structural view of identity assumes individuals are subject to forces outside their control while an agency perspective assumes individuals have the power to act independently. From a structural perspective, traditional bureaucratic elements such as the hierarchy of authority and division of labor impose rigid boundaries which determine an employee's ability to act and make decisions. Employees are the subject of change rather than authors of change. The basic paradox at the relational level was between control and support. In place of personal interaction, policies and metrics frequently mediate control-based relationships. Goal setting and task completion compete with human development activities (Cameron & Quinn, 2006). At the ideational level, the central tension was between mechanistic and organic perspectives of change. Mechanistic systems value efficiency over adaptability and assume simple, linear interactions in place of complexity.

Figure 2-2 Tensions Underlying the Three Levels of Meaning



Employees created new narratives to address these underlying tensions as they made sense of organizational change. I found that employees constructed two basic types

of narratives to manage paradoxical values, which I label "differentiation" narratives and "integration" narratives. Differentiation narratives fractured value dichotomies while integration narratives synthesized paradoxical ideals. The dashed line in Figure 2-2 shows the split between values created by the dominant narratives across the three levels of meaning. By contrasting the dominant narrative pattern with a divergent pattern that developed within a single workgroup, this study shows how the type of narratives constructed in response to lean shaped change processes and outcomes.

As HE attempted to implement lean, differentiation narratives dominated employee discourse and produced a static cycle of change. These narratives established continuity with past practices and beliefs as they strived to preserve rationality and control in the context of ongoing change. While these meanings are necessary, a one-dimensional approach creates a divide that holds underlying values in opposition. Judgments take on a moral dimension as values, such as cooperation and competition, are isolated from each other and classified as either good or bad and right or wrong (Hampden-Turner, 1981). These moral labels imply that ideals that have been identified as virtuous should be exhibited without limit (Hampden-Turner, 1981). When individuals filter meanings through a one-dimensional perspective, they blind themselves to alternate viewpoints and amplify positive behaviors to the point of regression.

Figure 2-2 identifies two potential one-dimensional orientations, a coercive bureaucracy and an enabling adhocracy. The dominant narrative pattern within HE reproduced a coercive bureaucracy (Adler, 1999; Adler & Borys, 1996) in which managers attempted to establish order and enforce compliance with the change initiative by creating additional layers of structure and control. Instances of noncompliance and failure were viewed as a signal to impose even tighter controls, which stunted opportunities for experimentation. Although the other one-dimensional pattern was not observed in this study, an enabling adhocracy is also expected to impede change. An adhocracy is a dynamic organizational form that is responsive to unstable environments, but the lack of formalization can leave objectives unclear and inhibit the spread of knowledge. Without a management system to establish priorities, autonomous workers struggle to establish common goals when viewpoints diverge, which can lead to paralysis (Autier, 2001). Furthermore, the absence of formal procedures makes it difficult to

encode learning so that it can be reproduced and shared. This is especially problematic when outputs are more standardized than unique.

On the other hand, when values are held synergistically, they promote mutual development in place of rigidity (Hampden-Turner, 1981). Integration narratives foster a transformational context in which leaders elevate themselves and others to a higher moral level (Burns, 1978) as they broaden their cognitive frameworks to embrace virtues at either end of the continuum (Smith & Tushman, 2005). Furthermore, previous research of lean production at a Toyota joint venture has provided evidence that learning results from the "synergistic combination" of formal and informal aspects of organizing (Adler, 1993). Bureaucracies become enabling when structures and controls stabilize and diffuse organizational capabilities to help employees perform their jobs better (Adler & Borys, 1996). Procedures are flexible in that they capture current best practices and employees are encouraged to update them as they identify opportunities for improvement (Adler, 1999).

This study suggests that managers undermine improvement efforts when they elaborated one-dimensional narratives of change. While HE employees physically transformed a number of production areas, they failed to maintain these changes and realize the potential for incremental, continuous improvements. The dominant discourse pattern of narrow, coercive narratives stifled change across each level of meaning. Operations employees elaborated an identity narrative of disempowerment by centralizing power in authority figures, which was reinforced by senior management. Operations employees also relegated themselves to roles of passivity and reactivity. Since new conversational realities produce change, there can be no substantial change if people are unwilling to talk and listen as creators rather than observers (Ford, 1999). Relational narratives impersonalized the process of change as employees continued to distance themselves from the ongoing lean activities and concentrated on routine task completion. As lean changed the work landscape, employees focused on reestablishing mechanisms to bring processes and subordinates under control. Since employees externalized the change, it became increasingly difficult to see the personal transformations needed to effectively lead change (Quinn, 2004). In the absence of personal growth and a supportive environment, learning was stunted. The same

implementation tactics continued to be deployed with only minor variations (e.g. different metrics, different incentives), which promoted a self-reinforcing cycle of static perception and enactment. Employees were quick to fall back on routines that had worked in the past even if they weren't optimal. Finally, ideational narratives were guided by a desire to make lean appear easy and advantageous. The logical intent behind this approach was to make lean more readily accepted by establishing the reason for the change and by making lean concepts more understandable, but it also created a diluted understanding of lean that was stripped of Toyota's underlying system of values. When lean is viewed as a toolset, the original intent behind the tools is lost which inhibits the ability to appropriately adapt tools to the organizational context (Lander & Liker, 2007).

This study also provides insight into how to develop and sustain integration narratives to break static patterns of change. While most employees failed to significantly reconstruct their narratives to support a deeper level of change, one workgroup developed a divergent set of narratives that complemented the dominant narratives and fostered an enabling context for lean. This balanced perspective empowered employees to contribute to the change activities while providing enough structure to focus their efforts. This study demonstrates that integration narratives don't have to originate or be driven by leaders at the top of the organization. In this case, the key employees that led the development of integration narratives were all lower level managers who were closely involved in the workgroup's change activities. This study also reveals the fragility of newly formed narratives. While senior management hoped to spread this culture by promoting two of the key employees, instead it destroyed the dynamic that this workgroup had begun to create. This suggests that organizations need to identify the right people to nurture and preserve integration narratives within a small unit. While the natural inclination is to want to rapidly spread early successes, this is inconsistent with Toyota's view of development as a long-term commitment (Liker & Meier, 2007). One way to preserve positive transformations while gradually spreading these new understandings may be to rotate employees into the successful unit so they can experience a deeper level of learning.

2.6 Conclusion

This study demonstrates how change outcomes are ultimately determined in the patterns of discourses that employees generate in response to a new initiative. I identified two narrative patterns, differentiation and integration, and examined their impact on change processes and outcomes. Even though organizational culture contributes to discursive patterns, I found that employees could break past patterns even in the face of a strong organizational culture. However, at least in the short term, these changes are very fragile and can easily return to the dominant pattern without ongoing, determined effort.

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Chapter 3
Culture and Operational Excellence: Cultural Consensus Analysis as a Methodology to Assess Alignment

Most organizations strive for improved performance. Leaders frequently introduce operational excellence programs under a variety of names (e.g., lean, Six Sigma, continuous improvement) with the goal of deliberately transforming the organization to enhance firm performance. Making these types of changes often involves altering organizational culture. While it is relatively easy to make physical changes, it is much more difficult to alter engrained behaviors and beliefs. Organizational culture can act as an invisible source of inertia when norms and values promote the continuation of past practices, but it is difficult to assess these implicit systems of meaning.

In the field of organization development, culture is commonly targeted as part of broader interventions to support a change in mission, strategy or leadership (Burke & Bradford, 2005). This approach is partly rooted in the assumption that social processes underlie all organizational problems since all operating activities are designed and implemented by people (Schein, 1988). While culture has been linked to organizational outcomes and change effectiveness (Denison & Mishra, 1995; Gross, Pascale, & Athos, 1993; Kotter & Heskett, 1992; Pascale & Athos, 1981), some scholars have criticized the usefulness of this paradigm. Culture is the realm of the implicit and taken-for-granted, which makes it difficult to evaluate without a guiding framework (Cameron & Quinn, 2006). This study introduces a methodology for systematically evaluating shared values that was developed in the field of cognitive anthropology. This methodology has received very limited attention in studies of organizational change.

Cultural consensus analysis (CCA) is set of statistical procedures that generate insights into the pattern of shared beliefs when applied to survey responses (Romney, Weller, & Batchelder, 1986). The analysis first determines whether all members share a single set of values and then calculates the culturally appropriate responses to each survey item. In addition, further analysis can be performed to identify subcultures and

sources of variation (Handwerker, 2001). The purpose of this study is to demonstrate how CCA can be used to diagnose the degree of alignment between organizational values and an operational excellence program and to validate the appropriateness of this methodology for studies of organizational change.

In this study, I examine two organizations that attempted to adopt continuous improvement programs modeled after the Toyota Production System (TPS) with varying degrees of success and varying degrees of cultural alignment. TPS is a philosophy of operational excellence that revolves around collaborative problem solving to eliminate sources of waste within processes. This article begins with a discussion of change as a cultural transformation and then describes the key principle and values underlying TPS. I draw on TPS literature and literature in the social sciences to argue that TPS is grounded in two continuous value orientations, individualism-collectivism and results-process orientation. I then introduce CCA as a means to assess value orientation and demonstrate that CCA can be used to evaluate an organization's degree of alignment with these values. The article concludes with a discussion of the implications for research and practice in the area of organizational change and development.

3.1 Change as a Cultural Transformation

By definition, change is a departure from the past. When new management practices challenge established routines and behaviors, unreconciled differences threaten the acceptance of a new initiative. This points to a need to foster a culture that supports an organization's vision of change to help bridge differences between the past and the desired future. While no single best way to lead change exists, surfacing inconsistencies between the strategic vision and an organization's value system can help leaders design more appropriate approaches to change. This begins to address the need to build more complex models of interaction to replace the simpler abstractions developed in the past. Classical organization theorists gave us the machine model, which still influences the way many organizations approach change today (Morgan, 1997). New management practices are reduced to tools within a manager's toolkit that are expected to work in a consistent and predictable manner. Attempts to superimpose new work structures over culture ignore the actions organizational members take to make sense of and respond to these interventions.

Culture is a shared system of meaning that evolves over time through social interaction. An organization's core set of norms, values, and assumptions govern thoughts and behavior (Deal & Kennedy, 1983; Schein, 1985). When a change is introduced, the normative response patterns derived from these core values effect how change is perceived and carried out. The same features of culture that help employees manage routine activities can inhibit organizational change. Since managers have limited time and capacity to process information, values act as a filter to focus attention. These filters can blind managers to alternative courses of action. Values also influence strategic decisions including resource allocation, project prioritization, and goal setting. As employees draw on their existing frames of reference to give meaning to changes, the effectiveness of new management systems can either be strengthened or diminished (Brannen & Wilson, 1996). This highlights the importance of being able to assess and monitor shared values.

Since culture is embedded in structure, thought and action, it acts as a template for day to day organizational activity. Within a strong culture, there is widespread commitment to a core set of group norms and values that remain stable over time (Kotter & Heskett, 1992; O'Reilly & Chatman, 1996). A strong culture sets clear expectations, develops collective identity, promotes the continuity of values, and facilitates common interpretations of events (Trice & Beyer, 1993). This helps employees develop an implicit understanding of how to work together to accomplish the organization's goals even when facing new demands from the environment (Schein, 1985; Schein, 1990). New employees learn how to act appropriately when they internalize the values and guiding beliefs shared by other organizational members (Van Maanen, 1976). These common understandings act as informal control mechanisms to reduce the demands placed on formal information and control systems.

Although this characterization of culture emphasizes agreement, it does not mean cultural understandings are perfectly shared among all members. Everyone belongs to multiple social groups. These varied sources of influence produce a complex mosaic of beliefs so organizational members share only a subset of values to some degree. Even the shared values are shaped and reshaped in social interactions over time. Subcultures form as employees encounter different sets of challenges, goals, and experiences. A

more complete picture of culture begins to emerge when alternate patterns of cultural beliefs are examined in addition to the dominant ideologies. While some subcultures challenge the dominant culture, others share beliefs that enhance or are consistent with the dominant values (Ott, 1989). Even when no clear subcultures exist, organizational members will never uniformly agree. In the context of change, it is more important to understand whether organizational members have some degree of consensus around the key values that are relevant to the success of the organization as it strives toward a future vision.

3.2 Value Orientation and Continuous Improvement

The appropriateness of CCA as a methodology to assess cultural alignment is based on the assumption that a core set of values underlies the successful implementation of a particular change initiative. The intent is not to identify a universal set of values that determine the outcomes of planned change, but to examine a critical subset of values that pertain to the specific type of change being implemented within this study. This more nuanced view of the culture-performance link has been supported by other studies (e.g. Christensen & Gorden, 1999; Denison, 1990; Denison & Mishra, 1995; Kotter & Heskett, 1992). In keeping with this perspective, I first describe the change program being implemented by the two organizations in this study and then discuss two sets of value orientations that I argue relate to this change philosophy.

3.2.1 The Toyota Production System as a Model for Continuous Improvement

The Toyota Production System (TPS) is model of continuous improvement that has been adopted in industries around the world. TPS is more commonly known by the name, "lean production" which was coined in response the observation that lean manufacturers produce equivalent levels of output with significantly fewer inputs than traditional mass producers (Womack, Jones, & Roos, 1990). This includes less manufacturing space, inventory, investment in tooling, and rework. In a 2007 survey of U.S. manufacturers by *Industry Week*, more than 75% of respondents listed continuous improvement as a strategic practice and nearly 70% reported that they had adopted lean methodologies (Blanchard, 2007). TPS is an influential model that has guided

continuous improvement initiatives in a vast array of business sectors including health care, government, and other service organizations (Liker & Franz, 2011).

A basic tenet of lean is to continuously improve processes through the elimination of waste (Ohno, 1988). While traditional improvement techniques focus on optimizing individual production steps, lean targets non-value added activities in the "value stream" (Womack & Jones, 1996). Value is defined from the perspective of the customer so any activity that doesn't transform inputs into the desired customer output is categorized as waste. Since value added steps typically make up only a small percentage of the total product lead time, concentrating on waste provides the greatest opportunities for improvement (Liker, 2004; Womack & Jones, 1996).

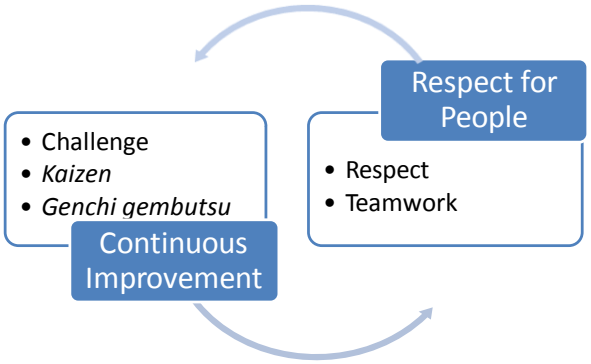
The book, *Lean Thinking* (Womack & Jones, 1996), broadens the lean concept to a way of thinking about improving any process, manufacturing or otherwise. Womack and Jones specify five principles that guide lean process improvement. Lean process improvement begins with defining value from the customer's perspective and identifying the entire stream of activities required to create that value. Once the value stream is identified, the goal is to make value flow by eliminating waste, to connect the flow of value to real customer demand, and to continually improve the value stream through employee engagement at the level of the work group responsible for the value-added activities. This characterization suggests two important values underlie lean process improvement. The first is a process orientation that focuses attention on the means of value creation. The second is a collectivist orientation in which employees work together towards a common vision for process improvement. These two value orientations reflect Toyota's guiding principles, which have been made explicit in an internal company document, *The Toyota Way 2001*[3].

Toyota documented its culture in *The Toyota Way 2001* as a way to develop a more consistent understanding of the Toyota philosophy across its global operations. All employees across every level of the organization are expected to exemplify the fundamental values illustrated in Figure 3-1. Toyota's process orientation is evident in the principle of continuous improvement. Continuous improvement is an ongoing

[3] Toyota summarizes its guiding philosophies as they were defined in *The Toyota Way 2001* on its website: http://www.toyota.co.jp/en/environmental_rep/03/jyugyoin03.html. Liker and Hoseus (2008) discuss this document in greater detail in their book, *Toyota Culture*.

commitment to bettering business processes. Basic elements of this philosophy include challenge (long-term vision), *kaizen* (incremental process improvement), *genchi gembutsu* (go to the site of value creation and observe). A process orientation has also been empirically linked to the effectiveness of continuous improvement initiatives (Choi & Liker, 1995).

Figure 3-1 Key Principles of *The Toyota Way 2001*



Toyota's process value orientation is also reflected in their belief that the right process produces the desired results (Liker, 2004; Rother, 2010). The assumption is that continuously eliminating waste in the process will lead to results that impact the bottom line over the long run. Outcomes are important, but there is a subtle difference how the relationship between performance and results is viewed. The perceived purpose of standards helps illustrate this difference. From a results oriented perspective, a firm creates standards in order to achieve a specific outcome. For example, standardizing the work process might lead to a reduction in workers. Once the standards are in place, they can be used as a control mechanism to enforce discipline and accountability, and they are periodically updated by "experts" to continue to reduce labor.

At Toyota, standards are viewed as a key tool for process improvement because they provide a controlled basis for valid experimentation. Standards serve as reference point to reveal gaps between expected and actual performance (Spear & Bowen, 1999; Rother, 2010), and these gaps then trigger problem solving activities. Any failure to meet performance expectations is a signal to return attention to the process (Spear, 1999), which involves going to the source of the problem to observe the issue and verify information (Liker, 2004; Liker & Hoseus, 2008). Standards facilitate continuous

improvement when they are used as a tool by the work groups that perform the work (Adler, 1996).

A collectivist value orientation is evident the second guiding principle of *The Toyota Way 2001*, respect for people. This principle contains two key values, respect and teamwork. Respect involves building mutual trust and understandings along with accepting personal responsibility in support of the team's objectives. The importance of these collectivist values was also a central finding in a longitudinal study of the first joint venture between Toyota and General Motors in the United States (Wilms, Hardcastle, & Zell, 1994). The researchers attributed the successful implementation of TPS within this plant to its ability to navigate US-Japanese cultural differences while staying true to the central beliefs of developing mutual trust, respect, and interdependence.

Teamwork is geared towards fostering shared opportunities for growth to maximize both individual and team performance. Toyota views ongoing human development as essential to ensuring its future growth and sustainability (Liker & Hoseus, 2008). As continuous improvement activities stress processes and expose problems, lean organizations become increasingly dependent on their employees to respond by engaging in collaborative problem solving. A key TPS concept is the importance of developing every manager and worker to become a disciplined problem solver to facilitate continuous improvement (Liker, 2004; Rother, 2010). Also related to this concept is the belief that management must support value-added workers, who perform the work that the customer is paying for. Supportive interactions spring from the quality of the relationships between employees, which are based on trust and respect (Liker & Hoseus, 2008).

3.2.2 Defining Value Orientations

Now that I have established relevance of process and collectivist value orientations to a TPS-style system of continuous improvement, I turn to the social sciences literature to more fully define these concepts. I clarify the meanings of collectivism and process-orientation by contrasting them with opposing value orientations, individualism and results-orientation. Although opposing value orientations are frequently depicted as mutually exclusive, I treat value orientation as a continuum

anchored between two dichotomous values. The core themes derived from this literature review will serve as the basis for evaluating employee value orientation.

Process-Results Value Orientation. Process and results value orientations have been characterized as an ends-means dichotomy. The basic distinction is whether actions are simply a pathway to an end goal or if they have value in their own right (Kluckhohn, 1951). Rokeach (1973) distinguished between two classes of values. Instrumental values refer to modes of conduct while terminal values are concerned with the end-states of existence. Other terms used to distinguish between these orientations include management by means and management by results (Johnson & Broms, 2000). Table 3-1 summarizes how these contrasting themes shape identity, relationships, and behavior.

Table 3-1 Central Themes in Process-Results Orientation Literature

PROCESS ORIENTATION	RESULTS ORIENTATION
Identity	
Activity-based- Work role defined by actions	**Task-based-** Work role defined by accomplishments
Relationships	
Holistic- Emphasize interconnections, Evaluations are contextually situated	**Divisible-** Emphasize categories, Evaluations independent of context
Moral- Actions guided by social norms	**Rational-** Justify actions based on anticipated outcomes, Manipulate parts to control results
Behavior	
Right work practices- Organize work systematically, Manage by means	**Measurable outcomes-** Goal-oriented, Manage by objectives
Activity oriented- Focus on how work is done	**Action oriented-** Focus on getting things done

The process-results value dichotomy is reflected in how individuals monitor their environment and perceive their role within the environment. Individuals with a process orientation emphasize how work activities are structured and carried out while those with a results orientation attempt to drive work with financial targets and clear metrics. From a process perspective is more important to perform work in the appropriate manner than it is to complete all of the work tasks (Johnson & Broms, 2000, Kohli, Shervani, & Challagalla, 1998; O'Reilly, Chatman, & Caldwell, 1991). In the context of change, a process orientation is more concerned with how the change will be implemented whereas a results orientation focuses on the outcomes of change (van Knippenburg, Martin, & Tyler, 2006). This is not to say that those with a process orientation do not care about

results, but that they are willing to invest in developing people to improve processes even when the immediate relationship between means and ends is unclear.

The process-results dichotomy also has broader implications for how relationships are perceived. Individuals with a results orientation are interested in establishing a rational connection between actions and outcomes when faced with a decision, but individuals with a process orientation are more concerned with social norms and moral standards. While those with a results orientation seek to justify all activities with analyses of a direct and calculable impact to the bottom line, individuals with a process orientation are interested in doing the right things even when the connection to the bottom line is unclear (Choi & Liker, 1992). Process orientation is also associated with a more complex and organic conceptualization of relationships, which emphasizes interdependencies and context, while a results orientation is associated with a mechanistic viewpoint in which system elements are categorized and separately maintained (Johnson & Broms, 2000). These contrasting mindsets produce different ways of seeing the world. An organization is viewed as an organism coordinating people who work together to solve problems rather than a system to organize tasks (Nisbett, 2003).

Individualism-Collectivism Value Orientation. Individualism and collectivism orientations stem from the relationship between the self and others. The key difference between these value orientations has been summarized as the degree of social connectedness (Erez & Earley, 1993) and as the level of concern for others (Hui & Triandis, 1986). Collectivists perceive close bonds with their social groups and are concerned with the impact of their actions on others while individualists perceive weak bonds with others and have a self-orientation. Both are multidimensional constructs that represent a network of related ideas and affect a wide variety of behaviors and beliefs (Hofstede, 1984; Hui & Triandis, 1986; Triandis, 1989). Table 3-2 summarizes the key differences as they relate to identity, relationships, and behavior.

A collectivist's sense of self is defined in terms of their group memberships while an individualist's identity is defined by personal attributes (Erez & Earley, 1993; Hofstede, 1984; Ho & Chiu, 1994; Triandis, 1989; Triandis, 1995). Individualists tie self-concept to their uniqueness as opposed to their ability to conform to an ideal, which

is enhanced through efforts at self-development (Ho & Chiu, 1994). Collectivists are more concerned with the development of the group as a whole.

Table 3-2 Central Themes in Individualism-Collectivism Literature

INDIVIDUALISM	COLLECTIVISM
Identity	
Stand out- Uniqueness of the individual	**Fit in-** Conformity to an ideal
Individual Identity- Self defined by personal attributes	**Collective Identity-** Self defined by relationships and memberships
Development for personal gain- Self-development and self-cultivation	**Development for collective gain-** Group development and actualization
Relationships	
Control- Leadership ideal, Domination	**Harmony-** Membership ideal, Self-control
Calculative- Utilitarian relationships, Emotionally detached	**Reciprocal-** Moral involvement, Emotionally attached
Independent- Self-reliant	**Interdependent-** Mutually dependent
Behavior	
Narrow assessment- Actions don't affect others	**Broad assessment-** Actions affect others
Personal responsibility- Attribute outcomes to internal individual causes	**Collective responsibility**- Attribute outcomes to external causes
Personal Interests- Self-direction, Fulfillment of individual needs, Prioritize personal goals over collective	**Group interests-** Conformity to group norms, Fulfillment of obligations, Subordinate personal goals to collective
Competition- Achieve goals through competition, Tend to compete with ingroup and outgroup members	**Cooperation-** Achieve goals through cooperation, Tend to cooperate with ingroup and compete with outgroup members
Individual Efforts- Individual acheivement, Individual decisions better than group decisions	**Group efforts-** Group accomplishments, Group decisions better than individual decisions

Collectivist and individualist relationships vary in both the quality and the strength of the connection. Collectivists perceive interdependent linkages between themselves and others while individualists value self-sufficiency and are more detached from the group (Erez & Earley, 1993; Ho & Chiu, 1994; Hui & Triandis, 1986; Triandis, 1995; Triandis et al., 1988). Collectivists' exchanges are based on long-term reciprocity in place of the individualist's short-term rational analysis (Erez & Earley, 1993; Hofstede, 1984; Hui & Triandis, 1986; Triandis, 1989; Triandis, 1995; Triandis et al., 1988). Managers with a collectivist orientation emphasize harmony while managers with an individualist orientation aspire to gain control over others and their environment (Erez & Earley, 1993; Hofstede, 1984; Triandis, 1989).

These contrasting perspectives also promote different sets of behaviors. A collectivist's perspective is broader and externally focused. Collectivists are concerned about the impact of their actions on others, and behavior is motivated by a sense of duty to the group (Erez & Earley, 1993; Ho & Chiu, 1994; Hui & Triandis, 1986; Triandis, 1995; Triandis et al., 1988). Work is characterized by a high degree of collaboration among group members (Ho & Chiu, 1994; Triandis, 1989; Triandis et al., 1988) and joint decision making is valued (Erez & Earley, 1993; Ho & Chiu, 1994; Hofstede, 1984). On the other hand, individualists' attention is narrower and internally focused. Actions are isolated from their effect on others and behavior is motivated by a desire to fulfill personal needs and interests. Work is characterized by a high degree of competitiveness and personal judgment guides decision making.

3.3 Evaluating Value Orientation: Cultural Consensus Analysis

To assess process-results and individualism-collectivism value orientations, I turn to a methodology developed in the field of cognitive anthropology. Cultural consensus analysis (CCA) is an analytic technique that can be used to systematically examine value orientations. When cultural norms are unknown, CCA provides insight into the pattern of shared beliefs within a group. CCA is based on set of statistical procedures, which can be applied to survey response data. The theory assumes that members of the same culture will respond to questions in terms of common understanding (Romney, Weller, & Batchelder, 1986). Organizational values can be assessed with CCA by asking what is appropriate within the context of that shared thought world. With this methodology, it is also possible to empirically test whether two groups share the same set of cultural beliefs (Romney, Batchelder, & Weller, 1987).

The informal cultural consensus model (Romney et al., 1987) is a mathematical model that can accommodate fully ranked, interval, or ratio-scaled responses. This methodology is essentially a principle components factor analysis of people rather than items, and several research articles provide more detailed descriptions and formal derivations (Batchelder & Romney, 1986; Romney et al., 1986; Romney et al., 1987). The first factor loadings are termed "competence scores" (Romney et al., 1986), and they provide a measure of each respondent's correspondence with the overall group beliefs. The model first estimates individual knowledge by looking at the agreement between

people and then estimates the culturally appropriate answers by weighting the responses of each person by their competency level and aggregating the responses across people (Weller, 2007). Competence scores can be used to identify cultural experts and outliers within a population. Embedded in this theory is the assumption that a single factor accounts for a high percentage of variation within the model. This is evaluated by calculating the eigenvalue ratio for the first and second factors. As a general rule, a ratio of three-to-one or greater signifies that the solution is one-dimensional and can be used to represent the shared set of group beliefs (Romney et al., 1987; Weller, 2007). Negative factor loadings also indicate that subcultures may be present (Borgatti & Carboni, 2007).

A key advantage of this methodology is that relatively few respondents are needed to determine the culturally appropriate responses with a high degree of reliability and validity (Romney et al., 1986; Weller, 1987). Since the weighting procedure makes the most of the information in the response data, it produces higher levels of validity for a given sample size and equivalent levels of validity with smaller sample sizes (Weller, 1987). As concordance increases, fewer respondents are needed to obtain an accurate aggregate. Minimum sample size is a function of the average competence of the respondents, the desired confidence level to decisively determine an answer to a survey item, and the proportion of items that are correctly classified (Romney et al., 1986). As an example, even when the average cultural competency is 50%, only 29 respondents are needed to correctly classify 99% of the items with a 95% confidence level. Romney et al. (1986) calculate the minimum sample size required for various levels of each of these factors. Additional details for this analysis are provided in methods section.

3.4 Research Setting & Methods

I conduct a comparative case study of two organizations engaged in continuous improvement modeled after TPS using both qualitative and quantitative methodologies. The use of mixed methods facilitates a richer and more complex understanding of human behavior and enhances validity since the same phenomenon is examined from multiple perspectives (Creswell, 2009; Yin, 2009; Stake, 1994). Quantitative methodologies are used to statistically assess value orientations, while qualitative methods provide greater contextual details for the two cases and help validate the quantitative results. I first

discuss the background of each case and then describe the approaches used to collect and analyze the data.

3.4.1 Case Selection and Overview

Case selection was guided by the desire for theoretical replication. This replication logic predicts contrasting results for anticipated reasons (Yin, 2009). Since the variable of interest is value orientation, I chose two manufacturing firms that have very different cultures but are otherwise similar. Heavy Equipment (HE)[4] produces equipment for industrial applications while Light Equipment (LE) produces equipment for home and office applications. Operations within both companies include fabrication, assembly, and paint. These companies are well respected, and each has topped *Fortune Magazine's* Most Admired list in their respective industry for the past five years. Both companies initiated corporate-wide continuous improvement programs modeled after the Toyota Production System (TPS). This study focuses on salaried employees within a US segment of HE's and LE's manufacturing operations.

Heavy Equipment (HE) launched its continuous improvement initiative in 2004 to support aggressive goals for organic growth. HE had been engaged in continuous improvement efforts for about four years at the time of this study. Although this initiative was called "Lean Six Sigma," the company established a new group of employees to drive continuous improvement activities and kept this group separate from the existing Six Sigma organization. HE also hired two lean consulting firms to mentor improvement activities. These firms provided coaches to guide weeklong lean events in each of the plants. Plants would typically have one or two consulting events each year, and lean black belts within each plant would organize smaller events and projects throughout the year. HE's initial focus was the creation of a model production line that could be replicated across other production lines.

Light Equipment (LE) began more focused continuous improvement activities in 1996 under the guidance of the Toyota Supplier Support Center (TSSC), an organization established by Toyota in 1992 to help North American companies implement TPS. LE had previously initiated its improvement efforts with the help of one of its suppliers who

[4] All names are pseudonyms.

was also a direct supplier to Toyota. The company sent two of its top employees to the supplier for six months to learn TPS, and the employees then returned to lead improvement efforts within LE. This focus on continuous improvement became known as the LE Production System (LEPS). At the time of the study, LE had more than ten years of lean experience. The decision to adopt TPS grew out of organizational crisis as the business faced mounting material and labor costs and had difficulty meeting production schedules. TSSC supplied LE with a TPS coach who provided daily on-site mentorship at one of their production plants over a period of five years. The lessons and knowledge learned at this site were then shared across the other production plants. LE also developed an internal group of corporate and plant lean coaches to guide continuous improvement activities. The initial focus within LE was to develop and refine a model production line.

3.4.2 Quantitative Sample and Measures

Surveys were used to measure individualism-collectivism (IC) and process-results (PR) value orientations. Although scales exist for these constructs, none were appropriate for the purpose of this study which examines shared beliefs (not personal) in a work setting (not family, friends, etc.). The key themes identified for each set of value orientations (see Tables 3-1 and 3-2) guided the development of the survey items and as many items as possible were adapted from existing scales. At least one statement relating to each value orientation was written for every theme so there would be an approximately equal number of individualism and collectivism statements and process and results statements. Each statement consisted of a management practice that was carefully worded in a positive way to avoid artificially high or low ratings based on general social acceptability. In addition, all statements were written in action form (i.e. starts with a verb and has at least one noun) in order to create greater expression equivalence.

The final survey contained 30 individualism-collectivism statements and 21 process-results statements (see Appendix B). Since CCA relies on agreement between respondents across items, at least 20 survey elements are recommended to obtain reasonable estimates of cultural beliefs (Weller, 2007). I conducted two small pretests with HE employees to assess the clarity of the survey statements and the written instructions. Based on feedback from the first pretest, I made minor modifications to the

wording of two statements. No changes were made after the second pretest. I also asked my contact person at LE to review the survey items and instructions prior to distributing the survey to these employees, and no additional changes were made.

The survey instructions asked respondents to evaluate each individualism-collectivism and process-results statement using a 5-point Likert scale (very important, important, moderately important, slightly important, or should be avoided) based on how the organization valued each managerial activity. The order of the statements was randomized for each respondent in order to minimize order bias (Borgatti, 1994). Respondents were also given the following hypothetical situation to reinforce the desire for responses that reflected shared perceptions rather than personal beliefs:

> *Imagine that a good friend has recently been hired as a middle manager at [your company]. He / she has asked for advice on how to be a successful manager at [your company]. Keeping in mind the way things work at [your company], reflect on how important it is for a manager to do each of these work activities in order to be successful.*

I distributed surveys to 85 salaried employees at HE and received complete responses from 45 employees (52.9%). I distributed surveys to 42 salaried employees at LE and received 35 complete responses (83.3%). In order to obtain a representative pool of responses, I strategically sampled supply chain employees across the product families for each organization. HE respondents were production line supervisors (20.0%), material managers (20.0%), quality managers (22.2%), lean leaders (20.0%), and operations middle managers (17.8%). LE respondents were production line supervisors (36.1%), material managers (8.3%), quality managers (16.7%), lean leaders (22.2%), and operations middle managers (16.7%).

I analyzed the survey responses using cultural consensus analysis (CCA) to create cultural profiles for each value orientation using ANTHROPAC (Borgatti, 1996). The model output provides an accurate estimate of the culturally appropriate responses to set of related questions and a measure of each respondent's cultural competence when a single factor explains most of the variance in the model. When this criterion is not met, it may be possible to identify subcultures by partitioning the data and rerunning the analysis on each of the subsamples (Caulkins, 2004; Handwerker, 2002).

Another key assumption for CCA is that survey items all relate to a single topic and are at the same level of difficulty (Romney et al., 1986; Romney et al., 1987). Respondents who have high cultural competence on one set of questions should also have high competence on another set of questions. To test for item homogeneity, I randomly split the survey items for each value orientation into two subsets and calculated respondents' competency scores (first factor loadings) for each subset (Weller, 2007). I obtained a high, positive correlation between respondent competency scores for both IC and PR statements ($r = 0.91$ and 0.82 respectively), which validates that this assumption has been met.

3.4.3 Qualitative Sample and Analysis

Semi-structured interviews and personal observations were used to collect additional data on employees' value orientations. I interviewed 19 salaried employees from HE and seven salaried employees from LE. All interviews were recorded and transcribed with the consent of the participant. Interviews with HE employees averaged about 50 minutes while interviews with LE employees averaged about 30 minutes. Interview participants were distributed across product lines and functional areas (production, quality, materials, lean, and operations middle management). The interview protocol (Appendix A) was developed as part of larger study of culture and organizational change. For the purpose of this study, I focused on the responses to the questions in the first section of the interview protocol, which were designed to elicit data on respondents' work identities and behaviors relating to the performance of their job. Empirical research suggests that senior leaders' values are expressed by employees as shared practices and norms (Hofstede et al., 1990).

In addition to these interviews, I recorded direct observations as field notes for both organizations. Observations at HE were conducted during on-site field work over a period of two summers (eight months total). I supported continuous improvement activities as a lean change agent, and I also had the opportunity to attend lean training sessions and presentations on the overall strategy for lean implementation. Observations at LE were conducted during two separate site visits. I was able to observe production operations and interact with supervisors for a total of four hours.

Qualitative data was analyzed to provide richer context for the continuous improvement activities and to generate insights into how organizational values shaped employees' construction of their work identities and behaviors. The data was coded using thematic analysis, which assumes statements have underlying patterns that transcend specific discursive episodes (Agar, 1983). A thematic analysis of episodes and their relationships reveals general cultural values and the basis for identity construction (Mishler, 1986). This analysis followed an iterative process as I shifted between the data, central themes, and existing theory. I initially began coding interview transcripts and field notes using a set of a priori themes (see Tables 3-1 and 3-2) derived from the literature review of individualism-collectivism and process-results value orientations (Ryan & Bernard, 2003). The initial themes were refined and expanded as new insights emerged from the data.

3.5 Findings

This section first presents the results of the quantitative analysis. I used CCA to create a response profile for each value orientation, and then further analyzed the variation in the response patterns. I then discuss the qualitative analysis to elaborate on and build support for the CCA results. The findings show that HE and LE had distinctive patterns of organizational values, and this finding is reaffirmed by the qualitative data analysis.

3.5.1 CCA Cultural Profiles

As an initial step, I tested whether HE and LE share a single set of cultural beliefs. Individualism-collectivism (IC) and process-results (PR) orientations were analyzed separately. Although the eigenvalue ratio exceeded the minimum criteria of three-to-one for both value orientations (IC = 5.16, PR = 4.44), a closer inspection of the results revealed issues with the model fit. A strong cultural pattern appears when the average competence score is above 0.65 while values below 0.50 are considered to be low (Weller, 2007). The average competence score for IC orientation was moderate (0.52) while the average competence score for PR orientation was low (0.44). In addition, several respondents have negative or low first factor loading, which means their answers

don't correspond well with those of the group. These findings also provide evidence that CCA is able to distinguish when groups do not share the same values.

Since HE and LE respondents do not all share the same response pattern, I created scatterplots using the first and second factor loadings to visually inspect the response profiles. Factor loadings can range between values of ±1.0. Figure 3-1 contains the IC scatterplot, and Figure 3-2 contains the PR scatterplot. On both graphs, LE respondents are more tightly clustered, which indicates that they share a more uniform set of beliefs. On average, they also appear to have higher first factor loadings and lower second factor loadings. I tested these observations by separately analyzing HE and LE respondents using CCA, and my observations were confirmed. LE has strong cultural agreement on IC values (eigenvalue ratio = 10.17, average competence = 0.71) and moderate cultural agreement on PR values (eigenvalue ratio = 5.75, average competence = 0.55). HE's beliefs are fragmented for both value orientations (IC eigenvalue ratio = 2.96, IC average competence = 0.40, PR eigenvalue ratio = 3.2, PR average competence = 0.36).

Following an approach developed by Handwerker (2002), I then segmented the graph into areas of high (> +0.5) and low (< -0.5) factor loadings and analyzed the intercultural variation. Each subculture is circled and identified by a letter on the scatterplots. Respondents in the middle of the graph have individually unique response patterns so they are not grouped into a subculture. Each subculture was separately examined using CCA. The CCA results confirm that respondents within each subculture share strong cultural agreement (i.e. eigenvalue ratios > 3 and no negative first factor loadings) with the exception of subculture C, which didn't have enough respondents be able to perform the analysis. The analysis also produced weighted answer keys with the culturally appropriate responses to the survey items for each subculture.

Comparisons were made between the subculture answer keys in order to gain insight into the variation in cultural beliefs. For subculture C, I calculated the mean response for each survey item since I was unable to obtain a weighted answer key using CCA. I identified survey items with largest differences in aggregate ratings and used this information to label the scatterplot axes. For example, subculture A thought it was very important to foster an environment of mutual trust and support, invest time in coaching your workgroup, and build connections through personal involvement and trust while

Figure 3-2 Profile of Individualism – Collectivism Value Orientations

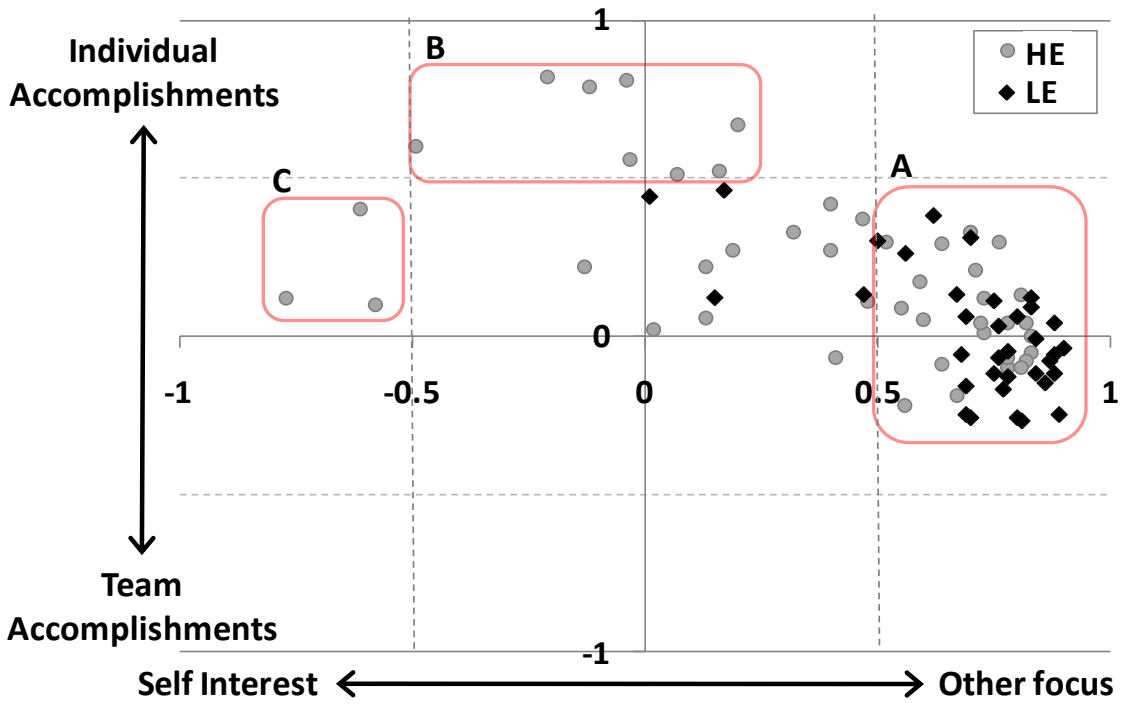
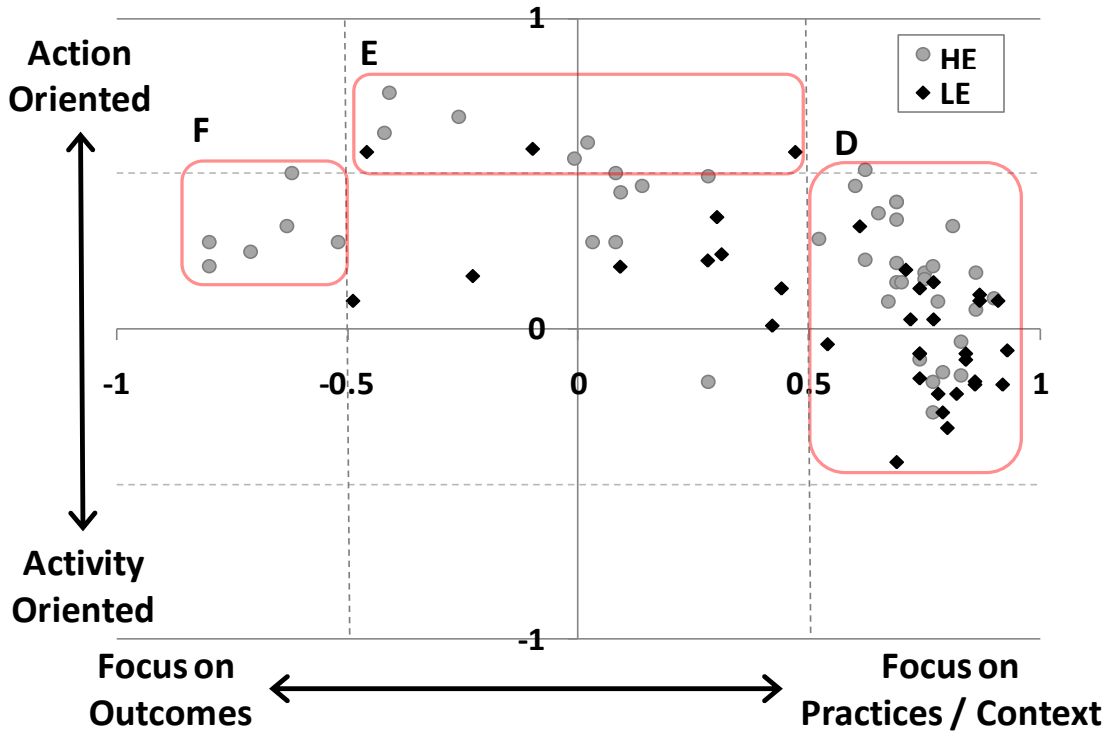


Figure 3-3 Profile of Process – Results Value Orientations



subculture C thought these were all slightly important. On the other hand, subculture C thought it was very important to work alone rather than cooperate with someone whose ability is lower than one's own, rely on yourself to get things done right, and work on process improvements on one's own when the team is slowing things down while subculture A thought these were all slightly important or should be avoided. Based on these differences, high first factor loadings on the IC x-axis are labeled "other focus" and low first factor loadings are labeled "self interest." The same process was followed for the remaining axis resulting in the IC y-axis being labeled "individual accomplishments" versus "team accomplishments," the PR x-axis being labeled "focus on practices and context" versus "focus on outcomes," and the PR y-axis being labeled "action oriented" version "activity oriented."

The findings suggest that LE has been more successful at cultivating a culture that is consistent with the core values of TPS. On the IC scatterplot, LE respondents are tightly clustered around a high first factor loading score, which represents a concern for others. In addition, a majority of LE respondents (54%) have slightly negative second factor loadings, which indicates a greater emphasis is placed on team accomplishments. In contrast, the HE response pattern is much more dispersed with a majority of the respondents (77.8%) having positive second factor loadings, which indicates stronger orientation towards individual accomplishments. On the PR scatterplot, a greater proportion of the LE respondents (68.6%) than HE respondents (59.1%) have a high first factor loading (Subculture A), which is associated with a focus on processes and context as opposed to outcomes. Furthermore a large percentage of HE respondents have positive second factor loadings (84.1%), while slightly more than half of LE respondents have positive second factor loadings (57.1%). A high second factor loading indicates a greater focus on getting everything done while a low second factor loading is more concerned with how the work is done.

3.5.2 **Qualitative Evaluation of Value Orientation**

In order to further validate these findings, I explore the themes exposed by CCA using my interview transcripts and field notes. In particular, I focus on the two groups of employees that were most closely involved in the ongoing continuous improvement activities, operations managers and change agents, to examine how value orientations are

reflected in managers' work roles and practices. Operations managers include both line supervisors who have responsibility for the hourly operators and middle managers who have overall responsibility for line performance. Change agents include lower level salaried employees with a narrow area of focus (i.e. production lines or projects) and more senior employees with a broad area of focus (i.e. plant or department). Table 3-3 shows the number people interviewed within each of theses groupings for each organization.

Table 3-3 Number of Operations Managers and Change Agents Interviewed by Company

	HE	LE
Operations Managers		
Line Supervisors	6	1
Middle Managers	2	2
Change agents		
Line Level Focus	2	2
Plant Level Focus	3	1
Total	13	6

An interesting surface level difference is evident in the job titles given to the line supervisors, but additional differences are also apparent they way they talk about and enact their work roles. At HE, line supervisors are know as "Process Technical Advisors," which suggests the role is that of a specialist who attends to mechanical aspects of production. Even though the word "process" is part of their job title, only one of the six HE supervisors interviewed mentioned that word in descriptions of their work responsibilities. Instead both supervisors and middle managers emphasized their role was to ship finished product and hit their metrics. Success was defined in terms of measurable outcomes. As one HE line supervisor summarized, success is "at the end of the week we meet all of our numbers… That's basically what they pay me for so that's the way I look at it" (HE Supervisor 6). Middle managers were similarly results focused in defining their role. "Success in my job is a zero recordable rate, a low safety incidence rate, being as close to schedule as the business permits as far as shipping [product] to our customer, and having a low defect rate" (HE Middle Mgr 1).

In contrast, LE line supervisors are known as "Work Team Leaders," which calls attention to the operators and the activities that they perform. While HE operations managers emphasized tangible outputs and explicit measurements, LE operations

managers attended more to implicit aspects of organizing. Middle managers stated that their overall responsibility was to ensure that the lines were functioning properly. Objectives were not the primary focus. Instead they were treated as guideposts to focus improvement activities and validate progress. LE operations managers believed that coaching was the key to high performance, and they spent a large percentage of their time on the shop floor developing their team members. They viewed themselves as "a resource to help them [work team] grow and develop into the next level" (LE Ops manager 2). Part of this development involved creating a safe environment for employees to experiment and learn from their failures. This required operations managers to have "faith that your team is going to be able to address the issue and that a short term disruption will in the end be better for your line" (Field notes 8/25/09). Success was "not the numbers", but in "watching my team development" (LE Middle Mgr 2) and "reflected in the team's success" (LE Supervisor 1).

While LE operations managers viewed themselves as a source of support for their employees, HE operations managers emphasized their role in setting the direction for their team. As one middle manager explained, "I'm a translator. Pretty much what you do is translate the higher level goals into how it affects them [work team] and what they need to do in order for us to meet the higher goals" (HE Middle Mgr 2). Most of the short term goal setting was tied to determining the production mix and sequence, and HE line supervisors' attention to the process primarily revolved around checking the status of the lines and making sure employees were focused on the right tasks. While goal setting was also a routine activity at LE, this was a collaborative process that involved setting incremental goals for process improvements. Middle managers worked with their line supervisors during structured and unstructured "reflection" times to develop supervisors' improvement targets. These targets were tied to the higher level department goals for the week, month, and quarter. Line supervisors in turn worked with hourly facilitators to establish the facilitators' targets for each section of the production line. The hourly facilitator role at LE is an additional layer between the line operators and the line supervisors that is staffed by hourly associates. Their job was primarily dedicated to daily problem solving. This position did not exist within HE, which meant that HE line

supervisors had to personally respond to all issues that arose in production. The findings for HE and LE operations managers are summarized in Table 3-4.

Table 3-4 Summary of Operations Managers' Roles and Responsibilities

	Heavy Equipment	Light Equipment
Job Title	Process Technical Advisor Business Leader	Work Team Leader Operations Manager
Key Responsibilities	• Product Responsibility • Metric Attainment • Provide direction	• Performance responsibility • People development • Improvement planning
Defining Success	• Performance against metrics • Customer satisfaction	• Progress against development plans • Employee morale / engagement • Team accomplishments

Change agents at the two organizations also had very different ways of conceptualizing and performing their jobs. They key difference was that HE change agents assumed individual ownership of process improvements while LE change agents facilitated the process of continuously improving. Although HE change agents spoke of having a responsibility to drive culture change, they primarily attempted to accomplish this by implementing projects to demonstrate the effectiveness of TPS tools and techniques. As one HE change agent explained, "Getting their buy in by actually fixing their problems and their broken processes has helped me to actually try and create that lean culture" (HE Change Agent 2). With strategy development and implementation as the centralized domain of change agents, process improvements were largely project-based or event-based activities in which cross-functional teams worked together for a week to make focused changes.

While HE change agents focused on identifying and resolving issues for the operations team, LE change agents concentrated on developing the operations teams' capacity to scope and carry out process improvements. The basic job function of the LE change agent was to be "a problem solving coach" (LE Change Agent 1) which primarily involved being "hands on what the floor was doing, seeing what their struggles are," and then "coaching them through their struggles" (LE Change Agent 2). Process improvement was a collaborative process that centered on making daily, incremental improvements in order to close the gap between the current state and the desired future

state. As part of the development process, LE change agents worked with operations team to help them set short term and long term improvement goals tied to the larger business needs. While HE change agents were concerned with the next improvement project, LE change agents focused on identifying the next development activity.

In addition to the contrasting perspectives of their work role, HE and LE change agents also had different ways of evaluating success. Since changes at HE were predominantly tied to large-scale projects, success was expected to be a directly observable outcome. As one change agent explained, "I rate it [success] by what I see on the floor, if I see things changing" (HE Change Agent 5). Because HE change agents were the driving force behind process improvements, another sign of success was the degree to which member of the operations team accepted and adhered to the changes with the ultimate goal being to get operations employees more engaged in the change activities. "As I see the people I'm working with get more involved in lean activities or accept it, that to me is success" (HE Change Agent 3).

Although LE change agents were not concerned with the visible transformation of the work areas, they expected to see process changes translate into an improvement in the business metrics over time. LE change agents felt their success was reflected in the accomplishments of the areas that they mentored. "If the work team leaders meet their monthly and weekly goals, that means I've done my job… The results will come if I do my job of developing the people" (LE Change Agent 1). LE change agents also monitored interactions and behaviors as a way to gage success. One change agent described this process. "As a coach, we start out building a trust relationship with them, and then they see that it's not intimidating… I think [success is] basically that they'll pull on you or look forward to your conversations" (LE Change Agent 2). LE change agents wanted to see the operations managers taking proactive ownership of improving the process, which was characterized as the operations team planning their day and working through problems rather than simply reacting to issues. These overall differences are summarized in Table 3-5.

Table 3-5 Summary of Change Agents' Roles and Responsibilities

	Heavy Equipment	Light Equipment
Job Title	Lean Analyst Lean Leader	Continuous Improvement Team Member HMPS Manager
Key Responsibilities	• Develop improvement strategy • Fix problems • Project implementation	• Support goal setting • Coach problem solving • Mentor improvement activities
Defining Success	• Visible transformation • Change acceptance • Employee participation	• Team performance • Employee development • Employee initiative

3.6 Discussion Section

While it has been argued that culture plays an important role in organizational effectiveness, culture itself is a vague and nebulous concept. Implicit values and norms can either undermine or enhance an organization's strategy for operational excellence. A key challenge for leaders is to objectively assess the alignment between core shared values and their strategic vision. Since leaders participate in the organizational culture, this creates an additional layer of complexity because implicit understandings fade from awareness and become subconscious driver of behavior (Schein, 1985; Schein, 1990). This study examines a methodology to help surface tacit beliefs.

This paper flows from two primary assertions that were grounded in the associated literature. The first is that change effectiveness is tied to an alignment between the strategic vision and a core set of shared values rather than sweeping culture change. These values are not universal, but are instead dependent upon the type of change being implemented. I argued that a philosophy of continuous improvement based on TPS is associated with two continuous value orientations, process-results and individualism-collectivism. The second was that CCA can be used to evaluate shared values, which provides a starting point for assessing alignment with the desired changes. I discuss these assertions in light of the qualitative and quantitative research findings and discuss the implications for practice and research.

This study provides preliminary evidence that CCA is able to distinguish between shared beliefs in meaningful ways. The two organizations were selected because they were expected to have different cultures, and the CCA results confirmed this. When all

respondents were analyzed together, the analysis was unable to produce a single model of shared beliefs. The scatterplots of the respondent factor loadings revealed that LE employees shared stronger collective and process orientations. This finding was expected since LE has been engaged in continuous improvement over a longer period of time and learned TPS under the direct tutelage of the Toyota Supplier Support Center.

The CCA results were also reinforced through a qualitative analysis of the work roles and responsibilities of two key groups of employees, operations managers and change agents. HE and LE salaried employees had distinct approaches to their work roles which mirrored the differences obtained through CCA. Although a number of researchers have emphasized the importance of leading change from the top (e.g. Cameron, 2008; Gagliardi, 1986; Kotter, 1996; Tichy & Ulrich, 1984), middle managers and front line supervisors also play an important role in guiding change. When a change program is directed at daily operating activities, lower levels of management work much more closely with the actual processes being affected by the change. Furthermore, employees look to their managers for behavioral cues, and supervisors' behaviors have been found to have significant influence on employees' performance and learning orientations (Kohli, Shervani, & Challagalla 1998). The findings from this study demonstrate that CCA can be used to build a baseline understanding of organizational values and norms.

The purpose of this study was not to suggest that culture can be reduced to a statistical output, but to show how CCA provides a foundation for additional reflection and action. To simply target culture change as part of a strategic vision is a daunting task, and some scholars argue against attempting it since culture permeates every aspect of organizational life (Schein, 1985). By focusing on a few key cultural values, leaders can begin to engage in more focused conversations to reshape existing organizational realities (Heracleous & Barrett, 2001; Ford, 1999). This does not mean that leaders can simply enact any culture they choose, but that a greater awareness of key cultural variables enhances their ability to decide how to move forward with change. For example, although LE had strong cultural agreement around the individualism-collectivism value orientation, agreement was moderate for the process-results

orientation. This indicates a potential area of opportunity that leaders can target to build a renewed focus and clarity around continuous improvement.

One important thing to keep in mind is that CCA is not an appropriate methodology to evaluate personal beliefs and that the survey was not designed to elicit personal beliefs. The goal of CCA should be to assess whether there is general agreement around the values that are important to the organization, and not to identify and "reprogram" cultural outliers. Although CCA provides clarity around the underlying patterns of beliefs that help shape employee perceptions and actions, it doesn't explain why those patterns have formed. When value orientations are inconsistent, it signals a need to initiate dialogue to investigate the root cause(s) of the variation. If leaders always attempt to locate the source within individuals, they overlook potent contextual and social systemic drivers of meaning (Ford, Ford, & McNamara, 2002; Hardy, Palmer, & Philips, 2000; Sonenshein, 2010). For example, the problem could be that the leadership team has never created and shared a clear vision for change or that other actions and organizational structures conflict with the stated vision.

This research contributes to the literature on change management by examining the potential of CCA as methodology to support studies into the relationship between organizational culture and change outcomes. Rather than assuming that differences in the beliefs are a function of a priori categorizations, factor loadings can be graphed to systematically examine the data for subcultures and further test their relationship to hypothesized antecedents. Since researchers are typically organizational outsiders who have incomplete and imperfect knowledge of the organization, CCA can also serve starting point to assess hard to get at values and beliefs. Researcher can then use this baseline understanding of organizational culture to design deeper probes into the culture – performance link. An additional advantage of this methodology is that it can be performed on a relatively small sample size with a high degree of validity and reliability (Romney et al., 1986; Weller, 1987).

3.7 Directions for Future Research

This study showed how CCA can be used to examine patterns of shared beliefs as leaders attempt to navigate change within their organization. One limitation of this study is that it only assessed value orientations at a single point in time. Future research could

assess the stability of value orientations over time. For example, surveys could be administered before and after a change intervention to examine its effectiveness. This would provide additional insight into how leaders can help guide the process of change. Another limitation is that study focused on a single type of change initiative. Since I have argued that value orientations are dependent on the type of change being implemented rather than universal, this raises questions about what values are appropriate in other contexts.

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Chapter 4
Change as the Loss and Reinvention of Control

Organizations seem to be confronted with a perpetual dilemma. In an increasingly diversified global marketplace, firms compete to provide goods and services that meet increasingly higher standards of quality, cost, and performance. Organizations that fail to adapt and respond to turbulence in their operating environment jeopardize their survival (Lawrence & Lorsch, 1967; Thompson, 1967), but a number of studies have estimated the failure rates of change initiatives to be as high as 80% or more (Beer & Nohria, 2000; Burnes, 2004; Clarke, 1999). These failures waste valuable time, money, and resources. While researchers have suggested that change management needs to be a core organizational competence (Cummings & Worley, 2001; Lawler & Worley, 2006; Kanter et al., 1997), the ability to successfully lead organizational transformation remains elusive.

One of the most common types of change programs over the past decade has targeted process improvements using methods known by a variety of names including lean, lean six sigma, operational excellence, and continuous improvement. In essence, these approaches emphasize the importance of having employees at all levels of the organization engaged in ongoing efforts to incrementally improve products and processes. One of the key events in launching this movement was publication of a book, *The Machine that Changed the World* (Womack, Jones, & Roos, 1990), which describes how Japanese management approaches and production techniques lead to superior performance. The birthplace of this new paradigm for manufacturing was the Toyota Motor Corporation, which has transformed the relentless pursuit of improvement into a strategic differentiator (Liker & Franz, 2011). Their philosophy of operational excellence is known as the Toyota Production System (TPS).

Despite the widespread availability of information on continuous improvement practices, companies still have difficulty translating these approaches into measurable successes. Mounting evidence shows that companies continue to fall short of the

standard of excellence set by the Toyota. In a 2007 survey of U.S. manufacturers by *Industry Week,* more than 75% of respondents listed continuous improvement as a strategic practice and 70% of respondents had adopted lean methodologies, but nearly 75% reported that they had made either limited or no progress (Blanchard, 2007). A review of past winners by the awards committee for the Shingo Prize raised similar concerns[5]. This U.S. based award recognizes organizations that have achieved a world-class level of operational excellence using lean methodologies, but the committee discovered that operational performance declined at a majority of the companies after they won award. In response, the committee revamped the award criteria. This limited progress is not confined to the manufacturing sector. In 1999, the Institute of Medicine published a widely cited study, "To Err is Human," which revealed that a large number of patient injuries and deaths are due to preventable errors. This study drove a renewed focus on process improvement to reduce errors and popularized the application of lean methodologies to healthcare, but follow up studies have failed to find a significant improvement in patient safety (e.g. Landrigan et al., 2010).

The purpose of this study is to gain insight into how organizations can develop an approach to change that fosters a system of continuous improvement. Change initiatives are commonly implemented as top-down, planned programs of change, but continuous change is more closely associated with emergent change processes. Emergent and planned change are often presented as dichotomous approaches, and relatively little is know about how to foster emergence (Livne-Tarandach & Bartunek, 2009; Tsoukas & Chia, 2002). In this paper, I adopt a multiparadigm approach (Gioia & Pitre, 1990; Lewis & Grimes, 1999; Poole & Van de Ven, 1989) to "connect" planned and emergent change processes (Livne-Tarandach & Bartunek, 2009) and generate new insights into managing ongoing change. My findings suggest that organizations facilitate continuous improvement when they release control at the top of the organization and create new forms of distributed control. I examine this process through a comparative case study of two manufacturing organizations that launched continuous improvement programs as

[5] Robert Miller, Executive Director of the Shingo Prize for Operational Excellence. Interviewed on radiolean.com, July, 2010.

top-down initiatives. One maintained a planned change approach to continuous improvement while the other consciously tried to develop more emergent processes.

4.1 Multiparadigm Approach

Multiparadigm approaches bring together disparate theoretical perspectives in order to generate a broader understanding of complex phenomena. The assumption is that no single theoretical paradigm is able to capture the objective reality or "truth" of organizing (Gioia & Pitre, 1990; Morgan, 1997; Poole & Van de Ven, 1989). Instead each provides a different window into the intricacies of organizational life. Theories are constrained within a zone of bounded rationality that limits what is noticed and analyzed. Multiparadigm approaches attempt to bridge the fuzzy conceptual boundaries between theoretical tensions (Gioia & Pitre, 1990) in order to "stimulate the development of more encompassing theories" (Poole & Van de Ven, 1989, p.563). This moves beyond pluralism, which proposes switching between alternate lenses, through efforts to integrate, connect, or transcend paradoxical tensions.

Rather than limiting analysis to the confines of a single framework, multiparadigm approaches involve elevating to a higher level of abstraction, or metaparadigm, so that multiple perspectives can be considered simultaneously (Gioia & Pitre, 1990; Lewis & Grimes, 1999). Gioia and Pitre (1990) propose treating this as an extension of triangulation. Metatriangulation builds converging insights from multiple paradigmatic perspectives while illuminating differences and allowing for a more comprehensive depiction of organizational phenomena. The value of multiparadigm research lies in its potential to expand the scope, relevance, and creativity of organizational theory (Lewis & Grimes, 1999). Relevance refers to a theory's potential to encourage discourse across paradigms and its ability to reflect the multi-dimensional nature of organizational reality while a creative theory opens new avenues to explore divergent perspectives (Poole & Van de Ven, 1989).

As an initial step, multiparadigm research involves selecting a relevant set of theories to examine the phenomenon of interest. Gioia and Pitre (1990, p.587) broadly define theory as "any coherent description or explanation of observed or experienced phenomena." In this study, I draw on the theories of planned and emergent change to develop a framework for facilitating continuous improvement that encompasses both

perspectives. Lewis & Grimes (1999) outline a strategy for conducting multiparadigm research, which I use to guide this research. Their strategy consists of three processes, multiparadigm review, multiparadigm research, and metaparadigm theory building, which are frequently carried out iteratively. A multiparadigm review examines the underlying assumptions embedded within each theory. Bracketing focuses on making disparate assumptions explicit while bridging involves a search for theoretical views that span paradigms. During the multiparadigm research phase, disparate lenses are applied empirically in either parallel or sequential studies. Parallel studies highlight contradictions and conflicts across theoretical perspectives as each perspective is used to develop a varied account of the phenomena. In sequential studies, an account developed from one perspective is used to inform the next study, which is analyzed through the alternate paradigm. This approach acknowledges differences while searching for complementary focal points. Finally, two techniques support metaparadigm theory building, which develops from a deeper understanding of differences, similarities, and interrelationships. Metatheorizing techniques identify patterns that span paradoxical understandings. Interplay techniques expose creative tensions in support of theory development and refinement.

4.2 Review of Dominant Change Paradigms

Approaches to organizational change are frequently grouped under two labels, planned and emergent (Bamford & Forrester, 2003; Burnes, 2004; Kanter, Stein, & Jick, 1992; Livne-Tarandach & Bartunek, 2009; Mintzberg & Waters, 1985; Weick, 2000; Wilson, 1992). Planned change has largely dominated organizational change theory and practice since Lewin's seminal work (1951) while emergent change developed largely as a critical response to this approach. I describe each of these approaches in greater detail in the following sections and then summarize the key differences in Table 1-1.

4.2.1 Planned Change

Planned change is rooted in the work of Kurt Lewin (1951). Lewin characterizes change as a process of moving from one fixed state to another through a series of pre-planned steps. Lewin's 3-stage model describes this transition as a linear sequence of events. The first stage involves "unfreezing" or challenging the status quo to prepare the

organization for change. "Changing" or transitioning between states is the second stage. Finally, during the "refreezing" stage, the organization institutionalizes the change to provide a sense of stability. In this context, the change process is bracketed by a clear beginning and endpoint.

Inherent in the planned change approach is a heavy reliance on managers and change agents to design and carry out a prescribed sequence of steps and activities for change (Wilson, 1992). The criticality of strong change leadership pervades organization development literature. This approach also underlies traditional strategy literature, which portrays strategic management as a completely rational process of formulation followed by implementation (Mintzberg, 1987). The implication is that outcomes can be directly connected to a deliberate action. Leaders implement formal controls to ensure plans are followed as designed (Mintzberg & Waters, 1985).

4.2.2 Emergent Change

Emergent change developed largely as a critical response to the relatively simple determinism of planned change. One of the main points of contrast stems from the viewpoint that "organizations are never frozen, much less refrozen, but are fluid entities … to the extent that there are stages, they overlap and interpenetrate one another in important ways." (Kanter et al., 1992, p.10). The emergent view is based on "the premise that change is pervasive and indivisible" (Tsoukas & Chia, 2002, p.569). Emergent change unfolds as an ongoing, open-ended adaptation to changing conditions (Burnes, 1996; Dawson, 1994). Experimentation and learning drive progress rather than the accomplishment of a pre-specified plan (Mintzberg, 1987; Bamford & Forrester, 2003). Over time new patterns of organizing take shape in response to the subtle variations that are produced in the "improvisations" of daily activities (Orlikowski, 1996). These small, ongoing adjustments can produce large cumulative effects over time.

From the perspective of emergent change, managerial control is at best limited. The link between cause and effect is unclear since multiple sources of influence interact to generate outcomes. Furthermore, predefined plans are seen as inappropriate for dynamic and unpredictable organizational and environmental conditions (Orlikowski & Hofman, 1997). In place of centralized, top-down strategy formation, emergent change calls for a bottoms-up approach since those who are directly involved with the process

are more capable of responding to complex and fluctuating circumstances (Bamford & Forrester, 2003).

An underlying theme permeates descriptions of planned and emergent change is the contrasting nature of control. Planned change is characterized by high levels of control while emergent change is characterized by low levels or the absence of controls. These differences are reflected across multiple domains of organization life including work roles, activities, and objectives. Within planned change, interactions and activities are managed with formal structures, procedures, and targets while emergent change is a more informal process of responding to contextual cues.

Table 4-1 Contrasting Control Themes within Planned and Emergent Change Paradigms

	Planned	**Emergent**
Role	Manage	Respond
Objectives	Acheivement	Learning
Activities	Projects / Routines	Improvisations

4.2.3 Bridging Perspectives of the Planned – Emergent Change Duality

Although research frequently treats planned and emergent change as independent processes, this is unnecessarily restrictive and potentially destructive view. Bateson (1972) uses the term, schismogenesis, to describe a growing split in the structure of ideas. Complementary schismogenesis, in which opposing ideas are increasingly differentiated, creates an imbalance that can result in pathology when left unchecked (Hampden-Turner, 1981). While neither planned nor emergent change is inherently pathological, advocating a unilateral perspective implies moral judgment is being used to distinguish good from bad and right from wrong (Hampden-Turner, 1981). With the elimination of upper limits on conventionally positive behaviors, these behaviors may become amplified to ineffective extremes. In the case of planned change, structure becomes rigidity, focus becomes narrow-mindedness, and direction become dictatorial. Similarly, emergent change degenerates as flexibility turns to reactivity, responsiveness becomes an inability to focus, and the freedom to innovate turns to chaos.

In most cases it also is unrealistic to assume that change will be either perfectly planned or perfectly emergent. Even when plans are preceded by thorough research and detailed analysis, unexpected events may force organizational members to spontaneously

chart a new course of action. On the other hand, when emergent change produces beneficial patterns of behavior, it is natural for managers to want to purposefully apply what they have learned to other areas of the organization. The term "continuous improvement" itself suggests a duality. "Continuous" alludes to an ongoing, unending process which is characteristic of emergent change. On the other hand, "improvement" implies a direction or specific purpose that focuses attention as in planned change (Weick, 2000). Even though the specific connection between action and outcomes may be unclear, it is not "in absence of explicit a priori intentions" as Orlikowski describes emergent processes (1996, p.65). In this light, researchers should not be asking which approach to change is better, but rather how can organizations simultaneously encourage both types of change processes to enable continuous improvement?

Livne-Tarandach and Bartunek (2009) provide insight into the answer to this question. In reviewing the research on duality and paradox management, they identified five main ways that dichotomies such as planned and emergent change have been handled. These approaches vary based the tightness of the linkages between the two poles of a dichotomy. The first is "selection" which focuses on one pole while ignoring the other. As previously discussed, a unilateral approach is problematic. "Separation" recognizes both ends of a dichotomy but treats them as independent processes that are used sequentially or are appropriate for specific organizational domains. The latter is representative of the contingency approach in which certain conditions call for a specific type of intervention (Burnes, 1996). For example, planned change is frequently prescribed for stable operating environments while emergent change is more appropriate for unstable operating environments (e.g. Dunphy & Stace, 1993). Neither of these approaches to duality is suitable for a multiparadigm study of change.

The remaining three approaches consider the simultaneous presence of both poles in different configurations. "Integration" combines the two poles through compromise. Duality is treated as a continuum in which a move towards one pole requires a tradeoff with its opposing pole. An example of this perspective is Mintzberg and Waters' (1985) categorization of strategy formation processes along a deliberate-emergent continuum. "Transcendence" involves reframing dichotomies into a reformulated whole. It implies an ability to think paradoxically whereby organizations attend to competing tensions

simultaneously instead of treating them as a choice (Lewis, 2000; Smith & Lewis, 2011). Original tensions are replaced by new understandings as they are channeled "into a new form representing a redefinition or a unique synthesis" (Livne-Tarandach & Bartunek, 2009). The final approach is "connection" which embraces differences and gives equal status to each pole. Rather than creating something new as in the transcendence approach, the connection approach respects and seeks to learn from inherent differences. Dualities are treated as mutually reinforcing in that both poles are essential to producing optimal performance (Seo, Putnam, & Bartunek, 2004).

In this study, I use the connection approach to inform my analysis since it has the potential to offer a new perspective of the dynamic process of change. Up to this point, few studies have examined organizational change using this approach (Livne-Tarandach & Bartunek, 2009). Connection emphasizes the interactions among system elements rather than individual components, which facilitates a more holistic examination of change processes. Connection also fits with the objectives of this study, which focuses on enabling dualities rather than selecting between them.

4.3 Research Setting & Methods

I explore the interrelationships between planned and emergent change and their effects on continuous improvement (CI) processes through a comparative case study of two organizations. Both lenses of change were applied to the same data set since a shared data source facilitates comparisons and theory building (Ybema, 1996). I provide a brief background of each case followed by a description of the data collection and analysis procedures.

4.3.1 Case Selection and Overview

Case selection was guided by the desire for theoretical replication, which predicts contrasting results for anticipated reasons (Yin, 2009). Although both firms initiated CI activities as planned change programs modeled after the Toyota Production System (TPS), one had been intentionally migrating towards more emergent work practices. Heavy Equipment (HE)[6] and Light Equipment (LE) are manufacturing firms with production operations that include fabrication, assembly, and paint. HE produces

[6] All names are pseudonyms.

equipment for industrial applications while LE produces equipment for home and office applications. Both firms are well respected, and each has topped *Fortune Magazine's* Most Admired list in their respective industry for the past five years. While these companies operate globally, this study focuses on how change was implemented within a segment of their U.S.-based manufacturing operations.

HE launched its CI initiative in 2004 to support aggressive goals for organic growth. To support the new initiative, the organization established a new group of employees to drive CI activities and hired two lean consulting firms to mentor improvement activities. These firms provided coaches to guide weeklong lean events in each of the plants. Plants would typically have one or two consulting events each year, and change agents within each plant would organize smaller events and projects throughout the year. Prior to launching the CI initiative, HE had developed a strong Six Sigma program to reduce process variability. In many ways, HE's approach to CI was an extension of its Six Sigma improvement activities, which were structured as formal projects using the DMAIC (Define, Measure, Analyze, Improve, Control) framework. The two predominant forms of CI training were classroom sessions and hands-on participation during CI events. HE's initial focus was on the creation of a model production line that could be replicated across other production lines. At the time of this study, HE had been engaged in CI efforts for about four years.

LE's focused CI efforts began in 1996 under the guidance of the Toyota Supplier Support Center (TSSC), an organization established by Toyota in 1992 to help North American companies implement TPS. Prior to this, LE sent two of its top employees to a direct supplier of Toyota full time for six months to learn about TPS. When these employees returned, they began to lead improvement efforts within LE. The decision to adopt TPS grew out of organizational crisis as the business faced mounting material and labor costs and had difficulty meeting production schedules. TSSC supplied LE with a TPS coach who provided daily on-site mentorship at one of their production plants over a period of five years. The lessons and knowledge learned at this site were then shared across the other production plants. The initial focus within LE was to develop and refine a model production line. At the time of this study, the company had two primary model lines, which were also a focal point for training employees from other work areas on problem

solving and continuous improvement. LE also had a formalized coaching system for developing CI knowledge and skills. Even before forming a relationship with TSSC, LE had a long-standing culture that valued employee development and participative management. CI became an extension of this philosophy. At the time of this study, LE had more than ten years of experience with lean.

4.3.2 Data Collection

I collected data through interviews and observations. Individual interviews were conducted with 20 salaried employees from HE and eight salaried employees from LE. All interviews were recorded and transcribed with the consent of the participants. On average, interviews with HE employees lasted 50 minutes and interviews with LE employees lasted 30 minutes. Purposive sampling was used to get a representative pool of interview participants across product lines and functional areas (line supervisors, change agents, operations support, and operations middle management) (Miles & Huberman, 1994; Patton, 2002). I also conducted two semi-structured interviews with senior operations managers at HE and one unstructured interview with a senior CI manager at LE. The interview data is summarized in Table 4-3.

Table 4-2 Summary of Interview Data

Job Function	HE	LE	Description
Operations Middle Manager	4	2	Responsible for line performance
Line Supervisor	6	1	Responsible for hourly operators
Operations Support	3	1	Materials, Quality
Change agents	5	3	Change agents for continuous improvement
Senior Manager	2	1	Operations, Business continuous improvement leader
Total	20	8	

The interview protocols (Appendix A) were developed as part of larger study on organizational change processes. A longer version of the interview guide was used with HE employees since these interviews were also part of an in-depth, longitudinal study of change, and I was able to schedule an hour-long interview with each participant. At LE, I was limited to a half-hour with each participant. For the purpose of this study, I focused on responses to the questions that were common across both sets of interviews. The protocol had three main sections. The first section focused on the employee's general work background and their current work role. The second section was designed to elicit

personal experiences with the CI activities. Questions in the final sections asked them to discuss their perceptions of the CI program.

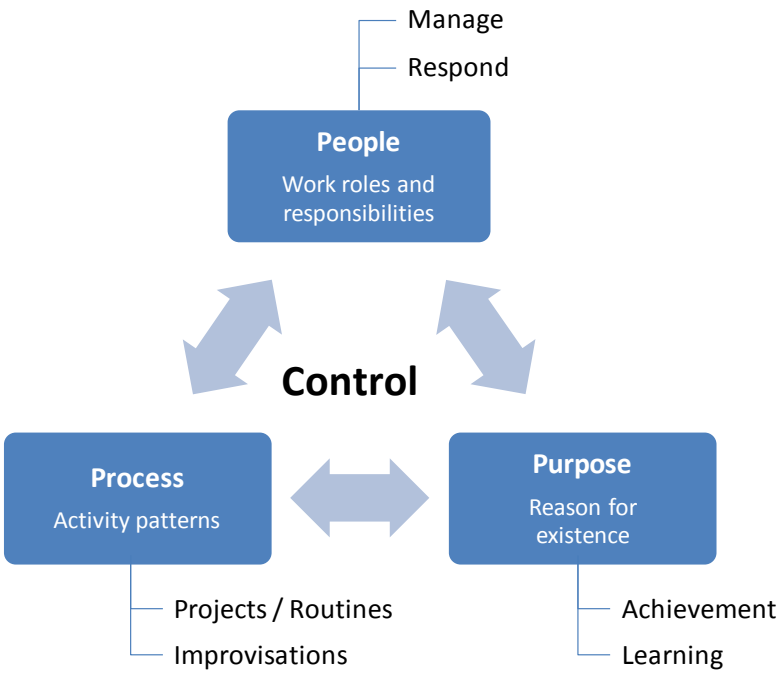
In addition to these interviews, I recorded direct observations as field notes for both organizations. Observations at HE were conducted during on-site field work over a period of two summers (eight months total). I supported CI activities as a lean change agent, and I also had the opportunity to attend lean training sessions and presentations on the overall strategy for lean implementation. Observations at LE were conducted during two separate site visits. I was able to observe production operations and interact with supervisors for a total of four hours.

4.3.3 Data Analysis

Analysis began with building individual case studies using a sequential coding process for each change paradigm followed by comparisons across cases to locate patterns (Eisenhardt, 1989). First I examined the HE and LE data separately through a lens of planned change. The findings from this step of the analysis then helped inform my analysis of both organizations through the lens of emergent change. Coding and interpretation continued as an iterative process of switching between individual frameworks and also "stepping outside" of the individual frameworks to analyze the data from a metaparadigm that spanned both theories of change.

In coding the data, I used "control" as a connection frame (Livne-Tarandach & Bartunek, 2009) or second-order concept (Van Maanen, 1979) to explain patterns in the data that link planned and emergent change processes. As previously discussed, control is an underlying theme that pervades these paradoxical approaches to change. I focus on how themes of control were simultaneously reflected in work roles, objectives, and activities and their interactions. A triangle model of change (Bartunek, 2003) is illustrated in Figure 4-1. This approach treats control as a transitory outcome that evolves as change is unfolding and connects planned and emergent change "in ways that can reflect an appreciation of the dualities inherent them yet not constrain them" (Livne-Tarandach & Bartunek, 2009).

Figure 4-1 Triangle Model of Planned and Emergent Change Dynamics



4.4 Findings

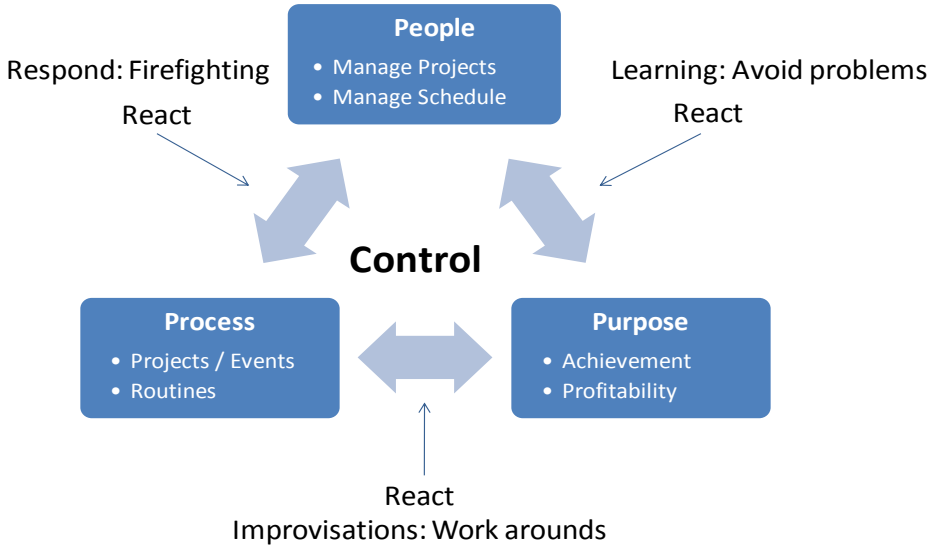
This section presents the findings from each organizational case study. Although both organizations initiated CI as a planned change initiative, over time their approaches to CI diverged. I discuss each approach and its implications in greater detail in the following section. HE continued to emphasize planning and relied on emergent approaches to reestablish control when plans failed to produce expected outcomes. LE relaxed formal controls and simultaneously embraced both planned and emergent change practices.

4.4.1 Case Study 1: Retaining Control through Separated Planned and Emergent Change Processes

HE treated planned and emergent change as independent approaches and gave precedence to planned change activities. CI was primarily structured as a set of projects to attain specific outcomes and was overseen by change agents who assumed the role of project manager. Despite efforts to retain tight control over change activities, frequently problems arose that interfered with daily operations. Employees developed emergent responses to address problems and restore control over activities. Once threats to

operations were averted, employees returned to routine activities and attempted to execute the prespecified plans. CI unfolded as employees cycled between planned and emergent processes. This approach to CI is illustrated in Figure 4-3.

Figure 4-2 Retaining Control through Separated Planned and Emergent Processes



People. Consistent with a planned change approach, managers and change agents played a central role in directing the change initiative. Control over decision making and planning was centralized. Senior management established long-range targets for cycle reduction, and at times set expectations for how to obtain these targets. While the high level of support from senior management helped build momentum for change, rigid expectations impeded improvement activities. Rather than developing interventions to address the specific challenges within each production area, an initial directive was to convert all major component production lines into one-piece flow lines. Prior to lean, most core component production areas consisted of parallel workstations where product was assembled from start to finish in one location. The transformation from static build to flow lines involved significant investments to reconfigure the production areas. At other times senior managers offered specific recommendations that were counterproductive. As one middle manager explained, "The thought and the concept were ok, but they were giving detailed 'you should do this' or 'you should do that.' I think you've really got to know your process to be able to talk at that level of detail. We

weren't forced to do anything, but I think we wasted some time on those ideas being thrown out there" (HE Middle Mgr 3).

To drive the vision established by the senior leadership team, at least one change agent was assigned to each product family. Change agents had the primary responsibility for defining and executing change strategies. They assumed the role of project manager as they translated inputs from operations team into project specifications, developed implementation timelines, organized CI events, communicated status updates, and coordinated implementation activities. Although the intent was to transfer more of this responsibility to the operations team, change agents remained the focal point for improvement activities. As CI efforts expanded to include more production areas, it became more difficult for change agents to personally support all of the changes.

While change agents drove CI, the operations team remained focused on allocating resources and monitoring operations to meet scheduled output. In essence, line supervisors' primary responsibility was to "structure the work to get out our maximum workload" (HE Supervisor 2). Their days involved a mixture of routine and non-routine activities since "there's always something wrong that happens on a day to day basis" (HE Supervisor 2). Line supervisors often described the routine portion of their day as a series of laps around their production areas to assess the status of production interspersed with meetings and paperwork. As line supervisors cycled through their areas they updated production priorities, made sure the workstations were properly staffed, and checked material status. These routines were interrupted when critical issues arose that threatened to stop the flow of production and the focus shifted to "putting out the fires" (HE Supervisor 4).

Process. CI was primarily carried out as a series of large-scale projects and events. This approach was reinforced both by both past practices and HE's choice of consulting firms to guide process improvements. CI was layered over the existing Six Sigma structure of process improvement. Six Sigma certification has a hierarchal structure with green belts at the lowest level, then black belts, and master black belts at the highest level. Change agents had to complete two projects in order to obtain Six Sigma black belt certification, which promoted large-scale, planned change over incremental, emergent improvements. In addition, other employees perceived

involvement with CI events to be an easy way to fulfill the project requirements for greenbelt certification.

During CI events, multiple cross-functional teams focused on implementing specific improvements. Initially all events were mentored by a consultant. Change agents would do most of the event scoping and preparation prior to the event, and the consultant would advise each of the improvement teams during the week-long event. In between the events, change agents didn't have any interaction with the consultants. As the CI program matured, change agents began to plan smaller and more frequent events, which mirrored the approach they learned from the consulting firms. Despite the transition away from larger events and projects, problem solving was never integrated with daily operating activities.

Both projects and events involved extensive upfront planning to gather data and minimize the impact to regular production. More time went into preparing for change than actually implementing improvements. As one change agent commented, everyone is "always looking for silver bullet... trying to find one big change to fix a problem instead of fixing five small things and making things better" (Field notes, 6/2/2008). Despite efforts to rigorously plan and control improvement outcomes, changes often introduced a number of new problems, which were difficult to resource. "When we do get the [production] line up, there's a list of a thousand things I've got to go fix… The ability to support what we say we're going to go do is a struggle" (HE Change Agent 2).

Projects were typically led by a change agent although in some instances a new operations role was created to manage the project. Examples of projects included developing one-piece flow lines, establishing supermarkets for material, and creating standard work for production lines. The project manager would gather input from the operations team and try to involve them in the design of the system. Although projects succeeded in dramatically transforming production areas, supervisors and support staff were often unprepared to manage the new processes and handle all of the issues that surfaced once the change was implemented. Because the scope of change was so large, the risk of negatively impacting production was also much greater. When product was assembled in static workstations, a problem often only affected a single workstation, and those employees could then be shifted to another workstation. In contrast, problems on a

one-piece flow line threatened to stop the entire production line. Supervisors felt increased pressure to perform in this new environment. "They want to make sure that they can perform, hit their customer commitments and hit their metrics. And that drives concerns. I would like to see some parts in front of me so I know that I can meet customer commitment. I'm going to have no time to react to quality issues. I don't trust my suppliers to deliver me quality parts, the required parts don't fit, and now this big takt time clock is running and that puts pressure on me. So there is a lot of that feeling about it because it forces all this material linking of activity" (Senior Mgr 1).

CI events frequently targeted improvements to workplace organization. Each team would be assigned a production area and a specific theme for improvement such as material presentation, material delivery, or tooling standardization and presentation. Teams consisted of operators and salaried staff from the line along with salaried employees from outside areas. At the end of the week, the team would disband after reporting on their progress and creating list of action items. Both projects and events required a handoff between the project manager or temporary team and the operations team, but this transition was often left undefined or placed a lot of additional work on individuals who already felt overburdened with their daily responsibilities. In describing this transition, an operations support personnel commented, "We don't seem to set ourselves up for success. Once we had it out there, we really didn't turn the keys over to anybody or hang it on somebody to do this and it just evaporated" (Ops Support 3). In many cases, action items remained open for months and improvements deteriorated as the focus shifted to other areas of production.

This project and event-based approach to improvement was reinforced by episodic CI training. Employees had the opportunity to learn about lean manufacturing techniques by attending classes and participating in CI events. HE required all operations employees to take two introductory courses that provided a general overview of lean manufacturing while optional classes elaborated on specific lean tools. Although this training provided a basic foundation of CI and the opportunity to apply lean tools in a structured improvement setting, it didn't teach employees how to incorporate problem solving into their daily activities. Employees were accustomed to rapidly responding to critical issues that threatened to stop production, and a lot of learning occurred "on the

fly" (Supervisor 3, Supervisor 6) as employees reacted to problems. The typical response was to "fix it for today" (Senior Mgr 2) rather than to understand the root cause and design a solution that would prevent it from reoccurring. As one change agent explained, employees "were trained to be people to overcome problems, and they don't know how to be problem solvers. They're good at work arounds… I'm really good at finding out how to hand make parts that I don't have, but I don't know how to fix the problem that I'm not getting parts" (Change Agent 2). These emergent responses to problems reestablished control over the flow of production, but they failed to produce sustainable improvements.

Another challenge presented by the planned approach to change was that active involvement required a much greater time commitment. Operators and supervisors had a difficult time breaking away from daily demands of production for extended periods of time. Furthermore, since most of the workouts and planning were conducted during first shift, employees on other shifts often felt disconnected from the change process. Although meetings were held to share information with second and third shifts, line supervisors on the off shifts felt excluded from the improvement processes. One line supervisor summarized the differences between the shifts. "What happens is the third shift [supervisor] just kind of gets stuck picking up the pieces and filling in the holes. He doesn't really have any participation in the lean initiative. And then I moved to second shift, and you can see the changes. They're more visible, but you don't have a lot of input on them. And now that I'm on first shift, you can initiate most of the changes so I've walked through all three roles and seen how they're different in each area" (Supervisor 5). This further impeded efforts to transition control over CI from change agents to the operations team.

Purpose. Senior management tightly linked the CI initiative to performance outcomes. Lean manufacturing was introduced as a means to enable growth through reductions in cycle time and increased capital efficiency. With the large investments to establish flow lines, senior management had high expectations for these lines and established a new set of metrics to assess line performance. "We tend to be more focused on the results and the financials and the metrics versus driving are we doing the right processes and are we getting better with lean" (Senior Mgr 2). Output received the

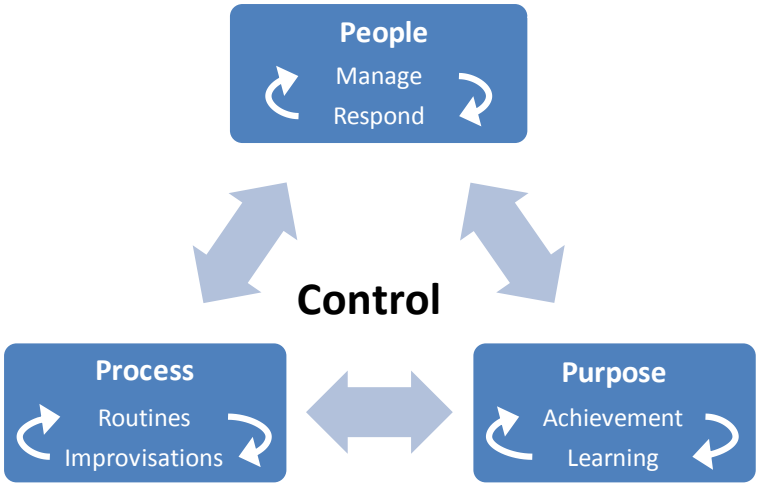
greatest amount of scrutiny so as long as "your customers are getting what they wanted and you're keeping them happy, you pretty much won't hear anything from our bosses. They kind of leave you alone then" (Supervisor 3). Employees would frequently advance product to the next workstation even the work was incomplete or they were missing material in order to hit output expectations, which drove large amounts of rework. The low tolerance for failures also made employees more reluctant to experiment and implement change without extensive upfront planning.

With the focus on profitability, people were treated as a cost to be controlled rather than a resource to be invested in. Payback calculations for flow line investments were based on the number of heads that would be removed from the line. Senior managers were also reluctant to add salaried employees to support the change efforts. As one manager explained, "I have serious doubts whether this business will ever get serious and put the proper resource in place to run a lean organization… We talk a lot about growth, but if we're going to grow 10%, we want to add 3% resource and take the 7% to the bank" (Senior Mgr 2). Employees had more to manage and less time to focus on CI. For example, since line supervisors were the first responders for every issue that occurred on the production lines, this left them little time for root cause analysis and improvement projects. A few areas did receive extra support on a trial basis to determine if the additional resources could be financially justified, but they were not given any coaching to develop their problem solving skills.

4.4.2 Case Study 2: Reinventing Control with Connected Planned and Emergent Change Processes

Although LE's early approach to CI closely mirrored HE's, the organization had been steadily working to develop the capacity to support smaller, ongoing improvements. This transition involved adjusting rather than abandoning planned change activities. Controls became decentralized and less formal, and employees were able to connect planned and emergent practices to drive CI. This transition was gradual, and some areas of the organization were more advanced than others. For this analysis, I draw more heavily on data collected from the areas were recognized as models for CI. In these areas, planned and emergent approaches were treated as complements to further change activities. This approach is illustrated in Figure 4-4.

Figure 4-3 Reinventing Control with Connected Planned and Emergent Processes



People. While top management continued to play a critical role in the advancement of CI, they allowed the specific improvement activities to emerge from the lower levels of the organization. Managers set the overall direction for CI, but they didn't dictate how to meet the objectives. "You give them your goals, and you let them decide what their plan is based on your goals" (Change Agent 3). Hourly facilitators had the primary responsibility for improvements through daily problem solving which was directed at the issues and opportunities they encountered on the production line. Change agents only implemented improvements when it was part of their personal learning plan. Their entire focus was on enabling process improvement through coaching.

LE felt it was important to develop employees at the top of the organization first so that the more senior managers would hold their employees accountable for continuously changing in the appropriate manner. They wanted managers to have a deep understanding of CI so they could support the continued development of their employees and drive improvements to the next level. In the areas where line supervisors and facilitators went through CI training before the middle managers, tensions often arose because managers were reluctant to release control and allow the supervisors and facilitators take ownership of process improvements. In an attempt to ensure facilitators continued to use and develop their problem solving skills, line supervisors were not allowed to have a facilitator working for them until they had completed their own CI training.

Process. In the beginning, LE relied on week-long events to drive improvements, but they stopped using this approach because they had difficulty absorbing and sustaining large-scale changes (Senior Mgr 1). Process improvement centered on daily problem solving, which was driven by hourly facilitators who usually worked on improvements right at the line. The cumulative effects of these small changes enabled them to meet long range improvement targets. The most developed production lines were structured to maximize the amount of time that facilitators and line supervisors could spend on problem solving. These lines had an hourly position called a "first responder" who was responsible for intervening when any immediate issues occurred on the production line.

A formal coaching structure was also created to support problem solving activities. Each change agent mentored a designated group of operations employees. Plant-level change agents coached facilitators and line supervisors while corporate-level change agents worked with the operations middle managers and the plant manager. LE's approach to process improvement and people development was a natural extension of how they learned TPS from TSSC and their longstanding culture of employee involvement. TSSC provided LE with a mentor who coached managers at a single plant on a daily basis over a period of five years. These managers were expected to apply what they learned to other production areas and to help develop the problem solving skills of other employees.

Employees also engaged in a number of structured and unstructured routines that were designed to facilitate emergent CI. Employees regularly set both long-term and short-term goals to guide process improvements and employee development. Change agents worked with the line supervisors and facilitators to develop weekly improvement plans that tied to the overall business needs. Throughout the week supervisors and facilitators engaged problem solving to advance the process from its current condition to the target condition. "I think it really lets us focus on what are the real problems right now instead of just trying to guess and make executive decisions on what problems you decide to go after" (Supervisor 1). Surrendering control over process improvements took continuous effort, and not every manager at LE was comfortable doing this. Change agents and managers also created development plans for each employee to identify learning gaps and ways to address those needs. For example, coaching might involve

putting an employee in a situation where they would have to develop the necessary skill. The business CI leader noted that he had found that an inability to coach was most often tied to the failure to create a plan for coaching (Senior Mgr 1).

Another set of routines involved formal and informal reflections. Formal reflections were a structured time to think back on the goals and accomplishments for the week and to learn from successes and failures. Employees at the facilitator level and up would engage in both personal reflections and scheduled shared reflections with their manager and assigned change agent coach each week. Informal reflections tool place as managers and change agents interacted with employees on the shop floor and provided ongoing support and guidance for process improvement.

In addition to the ongoing development employees received as they performed their jobs, CI training was designed to help employees develop the skills needed to drive incremental improvements. LE had formal development programs for facilitators, line supervisors, and operations managers. During these programs, employees were removed from their regular job for several weeks or months in order to dedicate their time to developing a deeper knowledge of lean tools and LE's CI philosophy. As part of this training, employees had the opportunity to gain experience solving problems and responding to issues in real time on a production line. Line supervisor development also included training on how to develop a facilitator. The overall training goal was to create a sustainable system of development. As one change agent explained, "If we send a [line supervisor] in with the tools to develop people rather than just with the tools to solve problems, he can create a team around him that helps to continuously solve problems" (Change Agent 1).

Purpose. Although goal setting was an important process, goal attainment wasn't the primary focus. Operations managers, line supervisors, and change agents viewed employee development as the key factor to organizational success. They believed the results would follow if they focused on building the capacity of their employees to solve problems. Clear expectations guided problem solving, helped drive commitment to CI, and provided a way to gage the impact of improvement and development activities. Managers simultaneously considered both their metrics and employees' development needs in their plans. As one middle manager explained, "I have to look at it as a whole...

I don't go after just metrics because that's very easy to do. We can do that and not bring our people along. I really look at it as an opportunity to learn. How do I get the metrics that we need, but the bigger picture is how do I get the people to develop to get there so it becomes a standard way of life for them?" (Middle Mgr 2).

Failures were treated as part of the learning process. It gave employees the opportunity to develop a deeper understanding of how to attack problems and increased the speed of the problem solving cycle. Managers and change agents would support the employees as they struggled with a problem and intervene when they felt it was appropriate. "I've found what areas of learning they need so sometimes you will let them potentially go down a path that you know probably isn't the best path, but if it's in the best interest of their learning for the future then you try and let them do that" (Supervisor 1). As managers put more trust in their employees, they also advanced their own learning. By allowing employees to choose what problems to work on, at times their eyes were opened to other ways to reach the desired end goal.

The development process also involved building an informal network of trust instead of relying on formal controls and authority. Lower level employees had to trust that senior managers and coaches were setting the right direction and were truly invested in their development. As one manager explained, "there's times when I've doubted the direction that we're going, but I believe we have good coaches and I believe that they have a better understanding than I do… So if they say we're going in this direction, I have a tendency to try it and see what happens" (Middle Mgr 1). Managers and change agents worked on building a trust relationship with their employees as a way to foster commitment to ongoing experimentation and efficiency gains. Managers had to trust that developing and empowering their employees would enable them to hit their metrics despite the difficulty of making a clear connection between small improvements and the end result. "Labor is obviously a huge metric. It takes a little bit- at least early on- of trust that you can have a person not directly contributing to the end product on a daily basis, and you're going to get your value and then some out of them. So if you don't have that understanding of exactly what they're going to be doing, it's very hard to just let that person sit off line doing what they do, hoping that they give you the return back" (Supervisor 1). At times this involved a willingness to step back and have "faith that

your team is going to be able to address the issue and that a short term disruption will in the end be better for your line" (Field notes 8/29/09).

4.5 Discussion

While researchers have debated the benefits of planned and emergent approaches to change, limited research has explored how both approaches simultaneously contribute to change outcomes. If paradoxes "reflect the underlying tensions that generate and energize organizational change" (Ford & Backhoff, 1988), then change research should seek to exploit tensions rather than suppress or resolve them. This study uses control as a connection frame to link the dynamic tensions between planned and emergent change processes.

The first case study presented an example of an organization that retained a high level of centralized control and decoupled planned and emergent change. Emergence was subverted in favor of centralized planning and formal systems of control. This "coercive" form of managing change was designed to ensure compliance with authority and procedures in order to maximize efficiency, but it stifled creativity and experimentation (Adler, 1999). Emergent change primarily evolved as a reaction to unexpected events. As issues arose on the production line, "stabilizing" improvisations were intended to restore control and return the organization to an equilibrium state. Emergent change rarely led to sustainable improvements while planned change activities produced dramatic physical transformations that were difficult to maintain.

In contrast, the second case study examined an organization that decentralized control and cooperatively harnessed the unique strengths of planned and emergent change to accelerate iterative cycles of change. Managers developed an "enabling" organizational form that created a supportive structure for changes (Adler, 1999), which were carried out by employees at the lowest possible level of the organization. Control was distributed in new structures and routines designed to foster "generative" improvisations that produced incremental improvements. The new structures and routines functioned as "semistructures" (Brown & Eisenhardt, 1997) or "order-generating rules" that balanced order and disorder to keep the organization in a state of bounded instability (Burnes, 2005). Systems have the ability to transform themselves when they operate at the edge of instability (Stacey, 2003). Too much stability leads to intractable

rigidity while too much instability degenerates to chaos and self-destruction. Researchers have also argued that creativity and growth are optimized under conditions of bounded instability (Frederick, 1998; Jenner, 1998; Stacey, 1996).

Enabling semistructures seemed to share two key characteristics. First, enabling semistructures provided employees with a general direction for action. Second, enabling semistructures facilitated employee development. In this case, they developed employees' capacity for leading change. As an example, both of these properties are evident in LE's goal setting structures and routines. Managers provided direction by setting clear goals for their employees, but didn't give them a roadmap for how to arrive at the final destination. Goals channeled improvement efforts towards desired outcomes while giving employees wide latitude for creative problem solving. Since the objective wasn't to leap to the end goal with a single project, managers and change agents also worked with employees to establish intermediate targets to guide progress. This collaborative process enhanced employees' abilities to scope and execute rapid problem solving cycles.

This study also extends research that has called for strong change leadership (e.g. Cameron, 2008; Gagliardi, 1986; Kotter, 1996; Tichy & Ulrich, 1984). Although senior management support is an important component, support is not enough to generate commitment ongoing organizational change. Centralized change leadership created the initial momentum for change, but improvement efforts remained narrowly focused and sporadic. Improvement activities accelerated as managers gradually released control over change activities while developing the infrastructure and informal trust networks to build organizational capacity for change. This suggests that more research is needed to understand how managers can more rapidly transition and create decentralized controls.

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Chapter 5
Conclusion

5.1 Summary of Findings and Implications

Many organizations invest heavily in operational excellence programs, yet still struggle to attain higher levels of performance. This research framed this problem as a failure to recognize the undercurrents within organizations that influence change processes and outcomes. First, organizational change is a dynamic process in which perception and action are continuously shaped through complex social interactions. Second, organizational behavior is regulated by order-generating rules, such as cultural norms and values, which create a sense of stability. Finally, change outcomes are unpredictable since the relationship between cause-and-effect is non-linear. Each chapter within this dissertation focused on a research question motivated by one of these three characteristics. To address these questions, I analyzed two case studies to identify underlying patterns in shared meanings, beliefs, and behaviors that contributed to change processes and outcomes. The key research findings are summarized below.

Research Question 1: How do patterns of discourse shape the processes and outcomes of organizational change?

In the first study, I constructed composite narratives to capture the shared understandings that employees developed in response to a change initiative across three levels of meaning: identity, relational, and ideational. HE adopted lean production with intent to transform organizational structures, processes, and culture, but the dominant narrative pattern that emerged over time reinforced a coercive form of organizing based on hierarchy, control, and a mechanistic view of change. Overall, HE made dramatic physical changes to a number of production areas, but they failed to sustain the improvements and translate the changes into savings to the bottom line.

Within this strong culture of bureaucracy, I also found one workgroup that was able to generate an enabling set of narratives that balanced the need for structure and control with a concern for support and collaboration. This workgroup developed a noticeably different dynamic that more closely reflected the organization's vision for change. Unlike the one-dimensional dominant narrative pattern that undermined change by reinforcing the status quo, these narratives integrated paradoxical tensions across each level of meaning to create an enabling context for change. This divergent workgroup reveals the importance of developing multi-dimensional narratives of change that synthesize tensions. It also demonstrates that enabling narratives can emerge within small business units even when they are not promoted by senior management, but they are easily disrupted.

Research Question 2: How can we assess the alignment between organizational values and strategic change?

The objective of the second study was to show how cultural consensus analysis (CCA) can enhance studies of organizational change by clarifying shared values. CCA is statistical methodology that was developed in the field of cognitive anthropology, and it is used to analyze two sets of values that I argue are associated with the Toyota Production System, process-results orientation and individualism-collectivism orientation. Organizational values can inhibit transformation when they promote behaviors that aren't aligned with the intended changes. The two cases selected for this study were chosen because the organizations had varying degrees of success with adopting lean production, and they were expected to have different sets of cultural beliefs.

The CCA results confirmed that HE and LE do not share the same value orientations. A closer inspection of the response profiles suggested that LE had been more successful in cultivating values that are consistent with the core values underlying lean production. For individualism-collectivism orientation, LE employees placed more emphasis on team accomplishments while HE placed more emphasis on individual accomplishments. For process-results orientation, LE employees were more concerned with how work was performed than HE employees. The CCA results were validated

through a qualitative analysis of operations managers' and change agents' work roles and responsibilities. The qualitative analysis found that LE employees were more concerned with developing members of their team and supporting workgroup and process performance while HE employees were more concerned with tangible outcomes. The findings provided evidence that CCA is able to clarify organizational values and make meaningful distinctions between cultural groups.

CCA has a number of potential applications for future studies in the field of organization change and development. For example, CCA could be used prior to launching a new initiative to assess value alignment and design more appropriate interventions. Another potential application would be to use CCA to evaluate the impact of a change intervention over an extended period to time. Further research would have to be conducted to determine if CCA can detect shifts in value orientations.

Research Question 3: How can organizations connect planned and emergent approaches to foster change?

While operational excellence programs are typically implemented as top-down, planned change initiatives, outcomes frequently unfold in unexpected ways, which drives employees to make ongoing adjustments. The final study linked planned and emergent change processes in order to show how both processes simultaneously shape CI activities and outcomes by using "control" as a connection frame. I found that HE and LE had very different approaches to CI.

HE favored a planned approach that attempted to retain a top-down system of tight control over change activities. CI was primarily structured as a set of projects to attain specific outcomes and was overseen by change agents who assumed the role of project manager. As projects were implemented, they frequently caused large disruptions that were difficult to manage. Emergent change unfolded as a reaction to problems that threatened to stop production and were used to restore order rather than improve the process. In contrast, LE developed decentralized and informal controls that integrated planned and emergent approaches to change. The intent was to enable lower level employees to engage in daily problem solving to resolve the issues they encountered on

the line as more senior managers provided guidance and coaching to further employee development. Over time, these incremental improvements generated significant savings.

This study reveals the importance of attending the systems of control that are used to manage organizational change. HE's centralized system of control inhibited emergent change. Emergent activities restored the status quo (stability improvisations) and rarely lead to sustainable improvements. On the other hand, LE created enabling semistructures that decentralized the system of control that fostered emergence, and emergent activities produced incremental improvements (generative improvisations).

5.2 Limitations and Future Research

The primary limitations of this study are a reflection of the choice of methodologies. First, case study research is used to expand and generalize theories rather than provide statistically generalizable conclusions (Yin, 2009), which is consistent with the purpose of these studies. I used contrasting cases within each study to enhance the external validity of the findings through theoretical replication (Yin, 2009). A future avenue for research is to determine if the findings hold in other organizational and change contexts. These studies examined the underlying patterns of top-down change introduced in two manufacturing firms. In these firms, manufacturing operations linked tightly coupled (Perrow, 1984) processes to produce a tangible output. Service industries where processes are loosely coupled (e.g. healthcare organizations) and where knowledge workers create intangible outputs (e.g. education) could present unique challenges. It would also be interesting to explore how patterns differ in organizations where change begins as a bottoms-up effort that is then spread throughout the organization.

A second limitation is that the data and approaches used in these studies are not suited to establishing causal relationships. The purpose of these explanatory studies was to develop rather than test theory. Another potential direction for research is to more systematically examine the relationships between the observed patterns and change processes and outcomes.

References

Perrow, C. (1984). *Normal accidents: Living with high-risk technologies*. New York: Basic Books.

Yin, R. K. (2009). *Case study research: Design and methods*. Los Angeles: Sage Publications.

APPENDICES

Appendix A: Interview Protocols

Heavy Equipment (HE) Interview Protocol

Background Questions and Work Role

1. How many years have you worked for HE?
2. Have you worked at any other HE sites? Which sites / how long?
3. Can you tell me your current job title and briefly tell me what you do?
   Probe: Describe your work responsibilities. What do you do in a typical day / week?
4. What does success look like in your job? / How do you know if you are successful (unsuccessful) in your job?
5. Can you describe a situation when you went above and beyond your work roles and responsibilities? What led you to take this action?
6. Have you ever turned down what you felt was an unreasonable request to take on additional responsibilities outside of your work role? What led you to take this action?

Personal Experiences with Change Program

1. What was your initial reaction when you learned HE was going to implement lean? Has this changed over time?
2. Have you been involved in lean activities and training? / How have you been involved?
3. Has your work been affected by lean? / How has it been affected?
4. Who prioritizes the lean activities in your work area? How are they prioritized?
5. Has the way you solve problems been affected by lean? / How has it been affected?

Whenever change is introduced, everyone feels some level of uncertainty about the impact it is going to have.

6. Do you currently or have you in the past had any concerns about the implementation of lean? / What concerns have you heard other employees express?

Implementation / Future of Lean at HE

1. How would you describe the relationship between six sigma and lean at HE? / Do you see any differences in philosophy?
2. What do you think is HE´s biggest barrier to being able to implement lean? What is the biggest barrier that your production area faces?
3. What do you think is HE´s greatest strength to being able to implement lean? What is the greatest strength within your production area?
4. What role do you think lean will play at HE 10 years from now?

5. If you were responsible for lean implementation across an entire plant, how would you know that you were successful?

Light Equipment Interview Protocol

Background Questions and Work Role

1. Can you tell me your current job title and briefly tell me what you do?
   Probe: Describe your work responsibilities. What do you do in a typical day / week?
2. Have you worked at any other LE plants? Which sites / how long?
3. What does success look like in your job? / How do you know if you are successful (unsuccessful) in your job?

Personal Experiences with Change Program

1. Have you been involved in Light Equipment Production System (LEPS) activities and training? / How have you been involved?
2. What is the goal of lean in your understanding?
3. Has your work been affected by LEPS? / How has it been affected?
4. What was your initial option of LEPS? Has this changed over time?

Whenever change is introduced, most people feel some level of uncertainty about the impact it is going to have.

5. Do you currently or have you in the past had any concerns about the changes introduced with LEPS? / What concerns have you heard other employees express?

Implementation / General attitudes towards LEPS

1. Do you think that LE is committed to achieving operational excellence? What does operational excellence mean at LE? How is this commitment demonstrated?
2. What do you think is LE's biggest barrier to being able to continue to make improvements through LEPS? What is the biggest barrier that your production area faces?
3. What do you think is LE's greatest strength to being able to continue to make improvements through LEPS? What is the greatest strength within your production area?
4. Do you feel that LE is committed to the development of every employee? Explain.
5. What role do managers play in the continuous improvement activities?
6. What role do you think LEPS will play at LE 10 years from now?

Appendix B: Cultural Consensus Analysis (CCA) Survey Items

Individualism-Collectivism Value Orientation (30 Items)

- Distinguish yourself professionally from your peers. (I)
- Fit in with your peers. (C)
- Allow employees to adapt the way they work to their unique abilities and preferences. (I)
- Encourage employees to develop and strengthen their workgroup's cohesiveness. (C)
- Provide regular guidance on specific goals for each employee's development. (C)
- Invest time in coaching workgroup. (C)
- Seek developmental opportunities to facilitate personal advancement. (I)
- Give clear directives and oversee improvements. (I)
- Build connection to employees through personal involvement and trust. (C)
- Work on process improvements on your own when the team is slowing things down.(I)
- Work alone rather than cooperate with someone whose ability is lower than your own.(I)
- Rely on yourself to get things done right. (I)
- Invest time and production resources to support outside areas that have fallen behind schedule. (C)
- Foster environment of mutual trust and support. (C)
- Single out individuals for recognition when organizational goals are met. (I)
- Reward the entire team equally when performance goals are met. (C)
- Share blame if a team member fails. (C)
- Consider impact to others before changing work practices. (C)
- Persuade others to accept change by primarily emphasizing organizational benefits. (C)
- Persuade others to accept change by primarily emphasizing personal benefits. (I)
- Sacrifice achievement of personal objectives for the benefit of your workgroup. (C)
- Get consensus to find a suitable solution to a problem. (C)
- Strive to outperform others in your workplace. (I)
- Partner with other employees to resolve issues and concerns. (C)
- Create a sense of competition among employees in order to motivate them. (I)
- Weigh input from your workgroup more than personal judgment when making decisions. (C)
- Work independently, without a lot of guidance. (I)
- Delegate problem solving to specialized staff. (I)
- Call attention to problems to promote learning and group problem solving. (C)
- Reward individual accomplishments more highly than contributing to group efforts. (I)

Process-Results Value Orientation (21 Items)

- Get the results by any means necessary (within ethical boundaries). (R)
- Deviate from process standards in order to meet delivery dates. (R)
- Drive the right results with the right metrics. (R)
- Expect employees to agree on and follow standards methods for common jobs. (P)
- Choose doing a great job on a few things over getting everything done. (P)
- Follow the right process steps in order to get the right results over the long run. (P)
- Develop ways to work around problems when they occur. (R)
- Develop the right process, and the results will follow. (P)
- Assess organizational health by monitoring progress against performance targets. (R)
- Value getting everything done more than doing something right the first time. (R)
- Support an investment decision only if the payback schedule is reasonable. (R)
- Stop to understand how the process failed when problems occur. (P)
- Assess organizational health by monitoring the way that work is performed. (P)
- Support an investment decision if you expect it to have positive benefits, even if they can't be quantified. (P)
- Understand a problem through detailed data analysis. (R)
- Focus on improving the links between process steps. (P)
- Break up processes into pieces so they can be controlled and managed separately. (R)
- Understand a problem through observing the process. (P)
- Know how to manipulate parts of the system to get desired results. (R)
- Focus on optimizing individual process steps. (R)
- Nurture relationships among employees working on a process. (P)