Institutionalized Organizational Learning and Strategic Renewal: The Benefits and Liabilities of Prevailing Wisdom

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Abstract

Strategic renewal depends on achieving an appropriate balance between using what an organization has learned and continuing to gain new insights and solutions. The process of institutionalizing organizational learning is at the center of this tension since it occurs at the pivot point of exploitation and exploration. We apply a dynamic perspective of Perrow’s typology of work technologies to explore the relation between the number of exceptions and analyzability of the problems likely to be encountered in various work settings and institutionalized learning. We propose that the nature of what is learned and actions leading to institutionalization differ across work contexts because of the varying complexity of problems and solutions. We explore the interactions surrounding institutionalized learning, exploration, and exploitation and argue that strategic renewal is strongly influenced by the way institutionalized learning affects the dynamic tension between exploration and exploitation.

Keywords
organizational learning, strategic renewal, organizational practices, institutionalization, 4I framework

What an organization knows and how well it is able to use this knowledge explains a great deal about strategic success and failure (Grant, 1996). Scholars argue that an organization’s performance depends on its ability to generate, combine, recombine, and exploit what it has learned (Kogut & Zander, 1992). This premise has led to extensive research on organizational learning (Bontis, Crossan, & Hulland, 2002; Crossan, Lane, White, & Djurfeldt, 1995; Edmondson & Moingeon, 1998; Fiol & Lyles, 1985; Haunschild & Chandler, 2008; Vera & Crossan, 2003). Crossan, Lane, and White’s (1999) organizational learning model, known as the 4I framework, is frequently used as a foundation for theory development in this domain. According to the basic premises of this model, organizational learning is a multilevel phenomenon including four processes—intuiting, interpreting, integrating, and institutionalizing—that unfold over time and capture the tension between exploration and exploitation. Crossan et al. (1999) conclude that attaining an effective balance between assimilating new learning and exploiting what is known and understood is an essential element and primary challenge for achieving strategic renewal.

A great deal of prior research has contributed to our understanding of the tension between exploration and exploitation (e.g., Eisenhardt & Brown, 1997; He & Wong, 2004; Levinthal & March, 1993; March, 1991; Tushman & O’Reilly, 1996). However, with the exception of work by Crossan and Berdrow (2003), comparatively little attention has been paid to linking the interplay between these aspects of organizational learning and strategic renewal (Crossan, Maurer, & White, 2011). Despite insights offered by previous research, the impact of institutionalization on exploration, exploitation, and strategic renewal has not been examined in depth. Moreover, despite extensive work regarding organizational learning in general and the 4I framework in particular (cf., Argote, 2011; Crossan & Berdrow, 2003; Crossan et al., 2011; Dodgson, 1993; Huber, 1991), there is little consensus regarding the steps and requirements for effective institutionalization of organizational learning. The literature has not carefully considered distinctions among work activities that may yield different patterns of organizational learning across settings and subsequently may affect strategic renewal positively or negatively. Organizational learning, and the

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institutionalization of pivotal lessons, is most often viewed as a positive phenomenon (Crossan & Berdrow, 2003) with only limited attention given to understanding potential liabilities of institutionalized learning for strategic renewal under varying conditions.

In this article, we focus on the process of institutionalization as the pivot point in the dynamic tension between exploration and exploitation. Our aim is to increase understanding of the influence of institutionalization on strategic renewal and the consequences of embedded learning across different organizational contexts. We offer a dynamic perspective on Perrow’s (1967) framework for understanding organizations through their technologies (i.e., systems for getting work done) as a foundation for theory development. We propose that the institutionalization of organizational learning not only offers important benefits but also introduces constraints and hurdles for learning new insights particularly when these ideas are inconsistent with an organization’s prevailing wisdom (Lei, Slocum, & Pitts, 1999; Leonard-Barton, 1992). Liabilities are especially important to understand and consider in the case of nonroutine and engineering technologies that are characterized by numerous exceptions since under these conditions errors in institutionalized learning can lead to devastating results.

We focus on the institutionalization of strategic organizational practices. These are defined as practices considered to be “dominant, critical, or crucial for achieving the strategic mission of the firm” (Kostova, 1999). This emphasis enables us to concentrate on the knowledge stocks that are particularly salient from a strategic perspective and to emphasize learning that is actionable and linked to behavior.

Several assumptions underpin our ideas. First, following much of the recent work in this domain, we see institutionalized organizational learning as both a process (developmental progression by which lessons learned achieve taken-for granted status) and an outcome or product (learning that has been institutionalized) (Crossan et al., 2011; Kostova, 1999; Kostova & Roth, 2002). Second, we assume that institutionalization usually takes place over time. Although there may be exceptions such as when a new CEO imposes drastic changes on an organization, it is relatively rare that organizational learning is institutionalized instantaneously (Baptista, 2009). Third, we assume that institutionalization takes place on a continuum, in other words, that organizational learning can be embedded to a greater or lesser extent (Berger & Luckman, 1966). Fourth, we assume that organizational learning can be hardwired into technologies or it can be encoded in behaviors and actions (Winter, 1990). Finally, we assume that what is learned is multifaceted and can include a variety of elements, such as rules, cognitive categories or concepts, beliefs, values, and behaviors (Kostova, 1999).

We contribute to the strategic management literature in several ways. One, we articulate important distinctions in work contexts that create different patterns of organizational learning. Two, we examine how these patterns influence the type of knowledge that becomes available to exploit or build on for further exploration and ultimately how these patterns influence strategic renewal under each context. Three, we articulate specific benefits and liabilities of institutionalized organizational learning and explore how these consequences vary across routine, engineering, craft, and nonroutine work settings.

We begin with a brief overview of what we know about institutionalization as a learning process, the characteristics of institutionalized learning, and the premises underpinning Crossan and colleagues’ 4I model (Crossan et al., 1999; Crossan et al., 2011). We concentrate on issues that are relevant to learning organizational practices. Next, we briefly review Perrow’s (1967) framework for understanding organizations as systems for getting work done. Applying a dynamic lens to Perrow’s framework, we discuss the implications for organizational learning and the institutionalization process. We then identify, compare, and contrast the nature of institutionalized organizational practices under routine, engineering, craft, and nonroutine contexts. We conclude with a discussion of the implications for strategic renewal stemming from the particular benefits and liabilities associated with institutionalizing organizational learning under each of these technology contexts.

What Do We Mean by Institutionalizing Organizational Learning?

The institutionalizing process introduced in Crossan and colleagues’ 4I framework (Crossan et al., 1999; Crossan et al., 2011) distinguishes learning by individuals or ad hoc groups from learning that becomes embedded in an organization’s norms, values, routines, and systems. Building on this, we define institutionalized learning as the extent to which learning lessons are instilled into an organization’s systems, structures, routines, rules, decision-making processes, and strategies to establish and direct further knowledge creation and the behavior of its members. Stocks of knowledge (i.e., intellectual capital and routines that enable work to get done; Bontis et al., 2002; McIver, Lengnick-Hall, Lengnick-Hall, & Ramachandran, 2012) feed forward through different levels of organization via intuiting, interpreting, and integrating processes. These institutionalized lessons facilitate exploitation both directly and indirectly as the routines underpinning expected behaviors become “more prevalent, more observable, more objective, and more real” (Crossan et al., 2011, p. 455). Institutionalized
knowledge leads to tacit and subconscious routines that are taken for granted, as well as explicit and documented procedures and rules that provide unequivocal guidance for organizational decisions and actions (Nelson & Winter, 1982).

A review of the literature reveals several potential models of institutionalization activities within organizations (Baptista, 2009; Berger & Luckman, 1966; Crossan & Berdrow, 2003; Kostova, 1999; Kostova & Roth, 2002; Zucker, 1977). Emphasizing the common elements among these views, we focus on three components of the institutionalization process: (a) objectification, (b) implementation, and (c) internalization. Objectification is essential to institutionalization because this phase of the process separates individual members of an organization from the lessons that are learned, thereby establishing what is learned as part of a common external reality that is collectively shared. Objectification enables organizational learning to be embedded in practices and understandings in a way that lessons can be retained despite turnover among the individuals involved. While objectification can be closely related to externalization, we contend that organizational lessons or knowledge can be made objective (i.e., extend beyond individual knowledge) without first being formally externalized and documented as explicit knowledge. The familiar story of the group of monkeys that learned not to reach for the bunch of bananas hanging in their cage and then passed this information along despite complete recomposition of the group of primates illustrates this well. The distinction between objectification and externalization becomes a particularly important consideration when examining nonroutine organizational learning. Once knowledge is detached from any particular organization member or group through objectification, implementation can take place, and as we discuss later in the article, nuances can be neglected.

Implementation is crucial because it embeds organizational learning into the ongoing activities of the organization and encourages consistency and reliability. Implementation blends cognition and action. Implementation also provides a platform for institutionalizing tacit lessons in organizational routines, systems, and values. Putting what has been learned into practice not only reinforces the lesson, but potentially enables a deeper understanding of what is learned.

Internalization is vital because the meaning and symbolism attached to organizational learning largely determines stickiness (Szulanski, 1996) and perceived value. Moreover, the stronger the level of internalization, the more likely knowledge is to be implemented. Internalization ties what employees know with their sense of how they fit within the organization. As we discuss in greater detail later in the article, the nature of internalization varies with the work context.

A Practice Perspective on Institutionalizing Organizational Learning

While the institutionalization of organizational learning influences a variety of outcomes, in this article, we focus on organizational practices capturing both the stock and flow (transfer and sharing of what is known; Foss, 1996; Kogut & Zander, 1992; Nonaka & Takeuchi, 1995) of organizational learning across collective organizational activity. A practice refers to the coordinated actions and behaviors of organizational members that are informed by meaning within a specific context (Cook & Brown, 1999). Organizational practices reflect the established, embedded use of organizational knowledge (Szulanski, 1996). A knowledge-in-practice perspective integrates the work of those who view knowledge or learning as an object with those who focus on learning through a community-of-practice lens (McIver et al., 2012). We view organizational practices as “particular ways of conducting organizational functions that have evolved over time under the influence of an organization’s history, people, interests, and actions that have been institutionalized in the organization” (Kostova, 1999, p. 309). Practices have also been referred to as ‘grammars of action’ (Pentland & Reuter, 1994), organizational routines or ‘performance programs’ compromising “habituated actions, routines, and standard operating procedures that contribute to organizational reliability” (Scott, 1995, p. 54).

A practice perspective recognizes that organizational learning contains both tacit and nontacit components that are likely to vary as work technologies become increasingly unanalyzable (McIver et al., 2012). Tacitness is an important consideration for understanding institutionalization since it is often more difficult to objectify tacit knowledge and the mechanisms for doing so tend to emphasize routines and behaviors rather than documents and knowledge repositories.

A focus on practice also provides a basis for identifying at least five measurable characteristics that signal organizational learning has been institutionalized (Kostova, 1999). Kostova argues that organizational learning can be considered to be institutionalized when practices that encode organizational knowledge and competencies (a) are shared broadly in the organization, (b) are accepted without question by organization members, (c) have the strong approval of organization members, (d) have symbolic and normative meaning for organizational members, and (e) are sufficiently familiar that they achieve a “taken for granted” status. It is important to note that although these indicators of institutionalization reflect factors that are internal to an organization, taken together these factors can have a substantial influence on the perception of and interaction with external actors. Of particular benefit to this article, these characteristics provide a foundation for exploring nuanced...
differences in organizational learning across different organizational contexts. Moreover, as we discuss later in this article, these characteristics help explain both the benefits and the liabilities of organizational learning that has been institutionalized in the form of practices.

Reexamining Premises of the 4I Framework

Four premises were articulated by Crossan and her colleagues in developing and elaborating the 4I framework (Crossan et al., 1999; Crossan et al., 2011). The implications of these premises are expected to vary with different work contexts. The first premise is that the challenge of strategic renewal is resolving the “tension between assimilating new learning (exploration) and using what has been learned (exploitation)” (Crossan et al., 2011, p. 448). We contend that institutionalization is where this tension is most pronounced and where the appropriate balance between exploration and exploitation is most tenuous. Therefore, institutionalization represents the point at which an organization’s momentum might lead to either strategic superiority (D’Aveni, 1999) or to organizational dysfunction. Our focus on the institutionalization of practices follows Kostova’s (1999) argument that strategic practices hold the key to achieving a firm’s mission and purpose.

The second premise is that organizational learning is a multilevel process and encompasses individual, group, and organizational phenomena. We focus on the collective stages of organizational learning—moving from integration to institutionalization. As Crossan et al. (1999) explain, institutionalization is conceptualized as “organizational” in that it describes the nonhuman elements of organizational learning that reside in an institution even after individuals leave. In this way, institutionalization refers to a collective level of embeddedness rather than to boundaries defining a particular unit of analysis. Moreover, this perspective directly links institutionalized learning with a practice lens by emphasizing the mechanisms that enable effective organizational activities.

The third premise is that the levels of organizational learning are linked by social and psychological processes (Crossan et al., 2011, p. 450). While we concentrate on the institutionalizing process, we propose that the nature of the work being done ultimately shapes what is learned and how it becomes institutionalized. The work context, therefore, influences what is institutionalized and how institutionalization takes place. Furthermore, we propose that each of Perrow’s (1967) four work context conditions facilitates some types of learning and limits other forms in part by enabling and constraining distinct aspects of the overall learning process.

The fourth premise is that cognition affects action and action, in turn, influences cognition. This dynamic interplay is particularly important to the ideas presented here because this sequence determines the extent to which institutionalization can be feasibly managed. We argue that cognition is likely to precede action in some settings allowing institutionalization to unfold as a potentially purposeful and hierarchically orchestrated event. This can aid in the intentional selection and retention of strategic initiatives that match an organization’s strategic intent with less distortion and fewer surprises (Mintzberg & Waters, 1985). In other technology settings, however, action may precede cognition or the two may be intertwined simultaneously. When this occurs, institutionalization may arise as an emergent and self-organizing process that cannot be easily managed, initiated, or inhibited (Mintzberg & Waters, 1985).

Four Contexts for Institutionalizing Organizational Learning

Perrow (1967) introduced a framework for understanding organizations that categorized work in terms of two dimensions: (a) the extent to which the problems that are encountered are analyzable and (b) the relative number of exceptions that are experienced while conducting the work. According to Perrow, technology (i.e., the system for getting work done) is related to complexity. When the number of exceptions is low, work activities can be relatively stable, predictable, and comparatively controllable. In addition, when problems or exceptions can be resolved by logical, explicit, analytic processes, solutions to familiar problems are more readily documented and explained, and solutions to new problems may be found by following established heuristics. In contrast, when the number of exceptions is high and the solutions to these exceptions are challenging to uncover or develop, organizational learning may take the form of components to answers that need to be combined in new ways (Nahapet & Ghoshal, 1998), and institutionalization may reside in the interactions among members of a community-of-practice (Brown & Duguid, 1991).

Integrating these two dimensions yields four distinct organizational work contexts: routine, engineering, craft, and nonroutine. Routine technology contexts are characterized by analyzable problems and experience few exceptions. Examples include banks, insurance, the postal service, and many assembly lines. Engineering technology contexts are distinguished by analyzable problems but experience many exceptions. Engineering work contexts are often found in semiconductor device fabrication, theme parks, biochemical engineering, or transportation infrastructure. Craft technology contexts have relatively few exceptions but experience problems that are very difficult to analyze. Companies that specialize in providing professional services such as financial planning or pharmaceuticals tend to have units that operate in craft contexts. Finally, nonroutine technology contexts are dominated by very difficult to analyze problems as well as a very large number of exceptions.
Trauma centers, disaster relief organizations, SWAT (special weapons and tactics) teams, and biomedical research operations are examples of work contexts marked by this level of complexity.

As noted, a routine context means that few exceptions exist and solutions are analyzable. Perrow (1967) explains that under these conditions, it is easier for firms to define tasks, specify actions, and put mechanisms in place to embed learning in systems, structures, and routines because there is low causal and outcome ambiguity (King, 2007). Employees use local rather than distant search processes (Gavetti, 2012). Work behaviors can be guided by established routines and work activities can follow standard operating procedures. The environment is relatively stable so change is infrequent and may often be predictable. Problems are potentially easier to identify and understand, and outcomes may be easier to anticipate and control. Moreover, the characteristics that define desirable results are known, specified, and routinely measured. A primary objective in most routine work settings is to reduce variation. Therefore, work activities, procedures, schedules, and interactions are formally planned and monitored for compliance. Employees tend to develop an instrumental organizational identity that focuses on transactional outcomes, such as job security, pay, and adequate voice. Firms are better able to obtain a comprehensive understanding of factors that determine the fit between the environment and organization practices. Taken together, these factors suggest that it is likely that institutionalized organizational learning can be complete and accurate. For example, H-E-B—a U.S.-based supermarket chain—maintains a significant market share in Texas and Mexico because of its progressive private-label brands, values, corporate culture, employee, and community identification. H-E-B also conducts business in various retail formats (Central Market, H-E-B Plus, Mi Tienda, and Joe V’s Smart Shop) and generates additional income through multi-tenant operations and third-party lease arrangements. It has become adept at applying lessons learned in one setting to guide organizational practices in other similar settings because the underlying conditions are consistent across these markets. However, despite the opportunity for learning, it is important to recognize that the potential for complete, accurate, and exploitable organizational learning is not always realized even in routine settings.

Engineering contexts experience a very large number of exceptions or decision points during work practices, but the problems themselves are well understood and clearly articulated (Perrow, 1967). Solution search processes often are known and fairly stable despite their complexity. The criteria needed to assess outcome success are also well understood. Because of the number of exceptions, a primary operating goal is to be able to accommodate expected or specified variations. Organization members must invest substantial time and effort to obtain a sufficient level of comprehensive and detailed knowledge to accomplish work outcomes. Since the technology is complex, extensive, and rational, employees typically identify with the tasks or work being done as their primary link to the organization. While this can provide a basis for internalization, it can also lead to dysfunctional consequences, such as the not-invented-here (NIH) syndrome or core rigidities (Leonard-Barton, 1992). The volume and complexity of work activities suggest there is a moderate risk that incomplete or inaccurate organizational learning will take place and be institutionalized.

Craft contexts are marked by few exceptions, but solutions to those problems that do occur are very difficult to analyze and require creativity and intuition resolve (Perrow, 1967). Since exceptions are infrequent, it may be relatively easy for firms to notice problems or outcomes that do not conform to expectations. However, the origin of the problem is often difficult to diagnose, so exceptions are often poorly specified or fuzzy. In addition, most exceptions are relatively unique and reflect unexpected conditions rather than emerging from systemic flaws or recognizable patterns. Thus, distant, rather than local, insight is necessary to generate viable alternatives. An important operating goal in craft settings is to be able to understand the sources of variation and to be able to devise practices that enable customized options. Employees working in a craft environment often develop a community or social identity with their organization because coming up with solutions to such unique problems may require a collaborative effort and multiple perspectives. As Brown and Duguid (1991) found in their study of service technicians, formal job procedures at times undermined workers’ ability to develop effective solutions to unfamiliar problems. These factors suggest there is a high risk that incomplete or inaccurate organizational lessons may be learned and institutionalized.

Nonroutine work contexts face complex and unique conditions (Perrow, 1967). Problems and exceptions are numerous, multifaceted, and often unfamiliar. The work context is often emerging or characterized by punctuated equilibrium. As a result, solutions that worked at one point in time may be ineffective at a later date. For example, in an examination of the factors contributing to the accidental shootdown of U.S. Black Hawk helicopters over northern Iraq in 1991 and the subsequent death of 26 civilians, Snook (2002) argues that institutionalized rules, orders, directives, procedures, checklists, and instructions that may have originally contributed to effective behaviors among the members of the task force team “Operation Provide Comfort” became static tools in a complex environment that required flexibility. Researchers examining high-reliability organizations also echo this logic. These scholars argue that ritualized flexibility, mindfulness, and preoccupation with failure, rather than fixed routines and procedures, are essential for attaining system reliability (Vogus, Sutcliffe, & Weick,
Weick & Sutcliffe, 2001). Not only are problems and exceptions themselves uncertain in nonroutine settings, it is often difficult to determine the level of fit between evolving environmental conditions and what has been learned. Thus, in nonroutine settings marked by increasing complexity, an important operational goal is to be able to diagnose the source and cause of exceptions, maintain organizational resilience, and to develop customized responsiveness to emerging situations. The risk that certain types of organization learning will be incompletely, inaccurately, or too rigidly institutionalized is high.

Factors Shaping Institutionalization in Different Work Contexts

We focus on three components of institutionalization that most researchers agree are essential to the process: objectification, implementation, and internalization. As explained, objectification is the process of separating what has been learned from those who have done the learning. Objectification depersonalizes organizational lessons and creates a common reality that is experienced equally by those who participated in the initial learning and integrating processes and those who only become involved as practices become embedded in the organization’s code (Fiol & Lyles, 1985; March, 1991). Objectification can occur by encoding organizational learning in written rules describing how a function should be conducted or in technology or it can take place by being encoded in people’s actions and interpersonal behaviors (Kostova, 1999; Kostova & Roth, 2002).

Implementation is the process of putting organizational learning into action. It is at the heart of this article since our focus is on organizational practices. The crucial factors to examine in this phase of the institutionalizing process are (a) how clear and consistent are the rules of conduct implied by a practice, (b) how completely or comprehensively do organizational members follow the implied rules of conduct, and (c) how consistently do organizational members follow the implied rules of conduct. Implementation is necessary but not sufficient for institutionalization to take place (Kostova, 1999).

Internalization is the reattachment of symbolic meaning to a practice or organizational learning outcome or process (Selznick, 1957). Internalization results from creating acceptance and approval of a practice by demonstrating compelling value from its use and linking the practice to an employee’s sense of organizational identity (Kostova, 1999). Internalization signals that institutionalization is strong and complete. The synthesis of these three processes creates high levels of institutionalization as indicated by shared and accepted knowledge and competencies that generate strong approval from organization members, are infused with symbolic and normative meaning, and are so familiar and universal that they have achieved a “taken for granted” status (Kostova, 1999).

Institutionalizing What Has Been Learned in Routine Work Contexts

As discussed, shared understanding in routine work contexts is typically formal, well-documented, and captured in technology or written procedures or rules of conduct. The activities involved in creating these documents or developing formal policies governing work behaviors separates the learning from the learner and makes what is known available to employees who may not have been involved in the original learning process. Objectification is generally straightforward and relatively well-understood in routine work contexts. For example, bank tellers are responsible for accurately processing simple transactions, greeting customers, cashing checks, depositing money, and collecting loan payments. Therefore, teller training can be completed relatively quickly through brief periods of on-the-job training or through basic documented procedures.

Implementation is typically formal, heavily monitored, managed through feedback, and actively supervised during early stages of learning in routine work contexts. Procedures and sequences are typically clear and specific. Training ensures that employees have the necessary knowledge, skills, and abilities to perform the prescribed tasks. There is little need for discretion since there are few exceptions, so templates can be created to simplify knowledge transfer throughout the organization. Since activities are repetitive, employees are able to hone their capabilities and become increasingly effective and efficient at performing work tasks. This, in turn, reinforces the perceived value of what has been learned and ties implementation to organization rewards.

Internalization is tied to the transactional organizational identity of employees. Frameworks such as the “job characteristics model” (Hackman & Oldham, 1976) have been instrumental for designing work to heighten experienced meaningfulness and responsibility for work outcomes and for linking knowledge of results from work activities to high internal motivation, job satisfaction, organizational identity, and commitment. In routine work contexts, effective application of what has been learned is crucial for creating the kinds of personal outcomes that employees value, such as higher pay, increased recognition, and job security. Thus, implementation and internalization create a self-reinforcing cycle to enable and strengthen institutionalization.

Institutionalizing What Has Been Learned in Engineering Work Contexts

Objectification in engineering work contexts is similar in many respects to the way this process unfolds in routine
work settings; however, the magnitude and complexity of knowledge repositories and work process procedures is much greater. Greater expertise and judgment is required to access and integrate crucial practices. Documentation in manuals and standard operating procedures are typically inadequate to capture the range and depth of what has been learned. Professional training that goes far beyond developing standard knowledge, skills, and abilities is required. Certification is often used to ensure that employees have gained the necessary understanding and analytic proficiency to enable them to use complicated search processes and decision heuristics. Objectification, therefore, is linked to professional education and standards of conduct and to extensive knowledge management systems, such as sophisticated databases, software systems, and decision support systems. Criteria for assessing performance are often technical, externally derived, and impersonal. At Accenture, for instance, newly hired employees receive specialized training through the Consulting Core Program, a 1- to 2-week intensive training session devoted to building deeply specialized skills. Accenture has received awards such as the MAKE (Most Admired Knowledge Enterprises) from independent knowledge management and intellectual capital research firms for its emphasis on developing knowledge workers.

Implementation in engineering work contexts is frequently driven by professional requirements and standards that signal high-quality outcomes. Particular behaviors are often captured in professional codes of conduct that may extend beyond organizational boundaries. Bounded rationality may constrain analysis and decision making in engineering work contexts, and this may contribute to institutionalizing incomplete or inaccurate lessons. Therefore, extensive practice is needed to apply heuristic judgments with accuracy and without bias. Social capital is also needed for effective implementation since broad networks of weak ties help ensure that all relevant data can be gathered in order to make fully informed decisions. In engineering work contexts, the cognitive and social elements incorporated in organizational learning processes require both balance and integration.

Internalization in engineering work contexts is closely tied to work or task identity and professional affiliation. Norms, values, and beliefs associated with the nature of the work are instrumental in attaching meaning to what has been learned in this work setting. One example is the “time out protocol” that is increasingly used by surgical teams to ensure that they are about to undertake the correct procedure.

Institutionalizing What Has Been Learned in Craft Work Contexts

Objectification in craft settings is also linked to intended outcomes and reflects externally established criteria for assessing performance. However, rather than being based on technology or professional requirements, assessment criteria are often related to strategic differentiation, responsiveness, and idiosyncratic preferences (Perrow, 1967). Therefore, objectification does not preclude customization or innovation. Externally valued and ritualized procedures for conducting reviews and assessments are important factors aiding in objectification in craft work settings. These familiar experiential processes help separate the individual from the action or behavior so that the work processes and outcomes can be more objectively assessed. Habituated processes such as After Action Reviews (AARs) or team “work around” sessions may also provide a foundation for developing trust and confidence in the community-of-practice so that more nuanced and disclosive assessments can take place (Brown & Duguid, 1991).

Implementation in craft settings involves less uniformity and behavioral repetition during work practices than is found in either routine or engineering settings. Ongoing work activities typically require minor adjustments in real time that are learned through experience. Since exceptions are relatively rare, it is important to be able to implement routines that enable organization members to sense when actions are unlikely to result in desired outcomes and to detect early warning signals that results may be unexpected. Implementing practices that promote mindfulness (Weick & Sutcliffe, 2001) and an ability to learn from rare events (Christianson, Farkas, Sutcliffe, & Weick, 2009) are crucial organizational learning outcomes that benefit from institutionalization in craft contexts. In addition, exceptions that do occur in these settings are often novel and unfamiliar. Therefore, crucial behaviors and actions focus on experimentation and learning from activity. It is important to implement routines that help organization members accurately distinguish signals (the true impact of an activity) from noise (information that obscures the message) (Garvin, 2000). Active engagement in social networks and communities-of-practice that address common interests can be a crucial ingredient for effective implementation in this work context. Sensemaking skills are also essential to effectively diagnose exceptions and interpret results (Weick & Roberts, 1993).

Internalization focuses on honing the knowledge, skills, and abilities needed to perform complicated and nuanced tasks as well as embedding attitudes and norms that facilitate strong interpersonal communication, heedful interactions, and effective interpretation of weak signals (Weick & Sutcliffe, 2001). Organization identity and meaning in craft work contexts tend to emphasize community and social connections (Perrow, 1967). Organizational routines designed for interpreting, relating, and restructuring are key elements in organizational identity in craft-oriented settings (Christianson et al., 2009). This suggests that internalization is often tied to social capital, network characteristics, and interpersonal relationships. Social network theory suggests that relationship characteristics rather than entity
attributes are crucial aspects shaping organizational identity in craft work settings (Brass, Galaskiewicz, Greve, & Tsai, 2004), therefore, implementing familiar routines for communal diagnosis, interpretation, and solution generation would appear to be instrumental for internalizing organizational learning.

**Institutionalizing What Has Been Learned in Nonroutine Work Contexts**

Organizational learning in nonroutine work contexts is directed toward developing ways to respond to conditions of high variety, high complexity, extensive tacit knowledge, and relatively low levels of observability and codifiability associated with the practices or procedures that yield desirable outcomes (McIver et al., 2012; Perrow, 1967). The knowledge-in-practice developed in these work contexts is particularly important from a strategic standpoint because it is typically valuable, rare, inimitable, nonsubstitutable, and deeply embedded in the work context (Barney, 1991). This often means that crucial work processes remain tightly linked to individual knowledge, skills, and abilities and therefore are more challenging to objectify. The behaviors, routines, frames of reference, and information that enables an organization to leverage this personalized expertise is critical to disentangle from the expertise itself if the organization is to fully capitalize on what its organization members know (Davenport & Prusak, 2000). Responses, such as expanding communication networks, emphasizing inquiry and dialog, engaging in experimentation and action research, and similar behaviors that open the system to new inputs and facilitate iterative and emergent responses are essential for effective functioning in nonroutine settings (Brown & Eisenhardt, 1998; Garvin, 2000). Complexity absorption rather than complexity reduction is crucial (Boisot & Child, 1999). Policies and practices that enable an organization to identify who has needed expertise and what the organization knows can be explicit. When there are relatively few exceptions to contend with, collective learning can emphasize established lessons and procedures, and evidence-based prescriptions. Organizational learning can be codified and documented and what the organization knows can be explicit. When there are many exceptions, diagnostic strategies and decision-making heuristics to enable organization members to match situations with solutions become equally important components of organizational learning. When search processes are rational, relatively certain, well-understood, and familiar, lessons learned can be integrated as ritualized behaviors and interactions designed to facilitate particular outcomes and interactions. However, when search processes require resourcefulness, improvisation, and innovation in uncertain and unfamiliar territory, then integrated and institutionalized lessons are more effective when they emphasize simple rules, means to self-organize, sensemaking processes, and situated missions and goals. These differences suggest that the implications for strategic renewal will also vary by work context.
Discussion, Implications, and Conclusions

Strategic renewal has been characterized as an effective resolution of the tension between inertia and commitment to a firm’s current strategy versus stress or dissatisfaction with existing outcomes and efforts to take new paths (Huff, Huff, & Thomas, 1992). This idea parallels the tension articulated in work on organizational ambidexterity and the need to find an appropriate balance between exploitation and exploration (Cao, Gedajlovic, & Zhang, 2009). Contradictory pressure between these two learning processes becomes most pronounced in the institutionalization stage of the 4I framework.

Institutionalized organizational learning carries substantial strategic benefits that are often associated with strategic

| Table 1. Institutionalizing Organizational Learning Across Four Work Contexts. |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| **Work context**                                | **Routine**                                     | **Engineering**                                 | **Craft**                                       |
| **Number of exceptions**                       | Few                                             | Many                                           | Few                                             |
| **Nature of problems**                         | Analyzable                                      | Analyzable                                     | Unanalyzable                                    |
| **Objectification**                            | Straightforward                                 | Moderately complex                             | Moderately complex                             |
| **Implementation**                             | Formal, heavily monitored behavioral scripts    | External and internal professional codes of    | Experimentation                                 |
|                                               | that are managed through feedback                | conduct and heuristics                         | Learning through experience                     |
| **Internalization**                            | Organizational identity reinforced through      | Professional identity based on work role and   | Identity based on mission, task identity, and   |
| **Practices**                                  | training and socialization                      | task and social network ties                   | community                                       |
| **Potential benefits**                         | Efficiency, reliability, and consistency        | Deep technological knowledge and resources    | Expertise networks and leveraged human talent   |
| **Potential liabilities**                      | Inertia                                          | Quality control                                | Resilience capacity and strategic agility       |
| **Number of exceptions**                       | Core rigidities                                 | Error detection                                | Improvisation and resourcefulness              |
| **Nature of problems**                         | Negative learning                               | Hazard prevention                              | Effective triage                                |
| **Objectification**                            | Unanalyzable                                    |                                                | Customized responsiveness                      |
| **Implementation**                             | High complexity and variety                     |                                                |                                                  |
| **Internalization**                            | Knowledge-in-practice and communities-of-practice|                                                |                                                  |
| **Practices**                                  | Collective diagnosis, interpretation, and action |                                                |                                                  |
| **Potential benefits**                         | Expertise networks and leveraged human talent   |                                                |                                                  |
| **Potential liabilities**                      | Superstitious learning                          |                                                |                                                  |
renewal (Crossan et al., 1999; Haunschild & Chandler, 2008; Lanzara & Patriotta, 2007; Zucker, 1977). Institutionalized lessons allow firms to pursue rent-generating activities with a high likelihood of success. Embedded practices provide the foundation for attaining advantage and accumulating the assets needed to try new things and experiment with new ideas. However, the particular strategic benefits associated with institutionalized learning are expected to vary systematically depending on the type of work setting (routine, engineering, craft, or nonroutine). Ultimately, the effectiveness of institutionalized practices is a function of matching work settings (exceptions and analyzable problems) with the organization’s learning requirements, learning capabilities, and strategies. Routine, engineering, craft, and nonroutine contexts differ in both the potential for temporary or sustainable competitive advantage and the effectiveness of feedback-based learning. It is important to recognize, that as learned lessons become more embedded in an organization’s activities or an employee’s identity, new ideas that challenge the prevailing wisdom become increasingly difficult to develop or adopt (Crossan & Berdrow, 2003). Absorptive capacity limits an organization’s ability to recognize the value of ideas that fall outside what is currently known and understood (Cohen & Levinthal, 1990). Likewise, core rigidities make it more difficult to adopt behaviors that differ from familiar core competencies (Leonard-Barton, 1992).

While institutionalization carries important benefits for strategic renewal, potential liabilities are equally important to consider (Arend, 2004). Inappropriately institutionalizing organizational learning may undermine current competitive advantages or embed organizational practices that inhibit flexibility and improvisation or may be difficult to unlearn. The liabilities of institutionalized learning can arise from several key sources: (a) erroneous or obsolete knowledge (Pfeffer & Sutton, 2006), (b) path dependence (Barney, 1991), (c) overconfidence (Levinthal & March, 1993; Tversky & Kahneman, 1974), (d) ineffective feedback-based learning (Schilling & Kluge, 2009), (e) causal ambiguity (King, 2007; Ryall, 2009), (f) outcome ambiguity (Zollo, 2009), and (g) lack of distant search mechanisms (Gavetti, 2012). The relative likelihood of experiencing these various sources of problems also varies across the different work contexts. Casually benchmarking what other firms experienced in the two work settings. Even when learning lessons are derived from an organization’s own activities, continuing to implement established policies and procedures without attending to changes in the work context or the external environment can lead to disastrous outcomes (Snook, 2002).

Building organizational strengths in routine settings is comparatively easy because work activities take place in stable, low-risk environments, and organizations can strive for operational effectiveness. Institutionalized lessons can lead to sustainable competitive advantages if a firm performs similar activities better than rivals (Porter, 1996) or implements isolating mechanisms to prevent imitation (Nadkarni & Narayanan, 2007). These practices can serve as a foundation for efficiency, reliability, consistency (Crossan et al., 1999), and expedite decision speed. Firms are thereby able to sustain above-average profits based on rules and procedures that support rational and planned innovation (Mezias & Glynn, 1993). Rather than devoting resources to distant searches, or focusing on growth through radical innovations, organizations can institutionalize practices that refine existing systems, technologies, and core capabilities. Rules and regulations allow greater operational consistency, reliability, and efficiency. Established and widespread procedures allow organizations to linearly execute existing knowledge and foresee predictable outcomes. Internal knowledge transfer and knowledge sharing is feasible because causal ambiguity is low. The Vanguard Group, a U.S. investment management company, for example, establishes consistency between its activities and overall strategy through institutionalizing routine practices that minimize portfolio turnover, distribute funds directly, avoid commissions to brokers, and limit advertising (Porter, 1996).

In routine contexts, institutionalized practices can also serve as a basis for organizational identification (Kogut & Zander, 1996) and commitment (Mowday, Steers, & Porter, 1979), which in turn, aid in managing task interdependence by facilitating effective relational coordination (Gittell, Weinberg, Pfefferle, & Bishop, 2008). Institutionalized practices are more readily leveraged and proliferated for strategic advantage (Jensen & Szulanski, 2007). Moreover, these practices can contribute to employee satisfaction (Locke, 1976) and encourage psychological ownership (Pierce, Kostova, & Durks, 2001).

The most common liability associated with institutionalized organizational learning in routine settings is complacency with institutionalized practices that have a history of working well. Feedback-based learning and bounded rationality reinforce local search with limited consideration of distant alternatives (Simon, 1991). Familiarity and rigidity allow organizations to slip easily into inertia (Gilbert, 2005), which makes it difficult to adapt to discontinuities, notice disruptive technologies, articulate the source of problems, or institutionalize new practices as solutions.
Since a firm is likely to experience positive feedback from exploiting institutionalized practices while conditions remain stable, it can become blind to signals that transformation is needed or that conditions are changing in discontinuous ways (Allaire & Fissirou, 1985). In this way, strategic renewal can be undermined by a delayed reaction to shifting conditions.

In addition, codification traps—solving new problems with old ways of doing things—inhibit the creation of new practices (Schulz, 1998). New information or technologies may arise that inappropriately reinforce an organization’s prevailing values, skills, managerial systems, and technical systems, thereby turning core capabilities into core rigidities (Leonard-Barton, 1992). For example, Blockbuster once enjoyed success in the video and game rental industry through traditional retail space and DVD services. However, the company filed for bankruptcy in 2010 after being overtaken by innovative practices, such as no late fees, DVD-by-mail, streaming video on demand, and kiosks from competitors (Netflix, Redbox, and OnDemand). Though Blockbuster attempted to mimic these innovations, it was too late. In addition, institutionalizing certain practices that do not fit an organization’s identity may confuse customers, decrease legitimacy, and waste money. Kodak—best known for its imaging and photographic film products—unsuccessfully expanded into unrelated businesses, such as chemicals, bathroom cleaners, and medical-testing devices instead of refining existing imaging and photographic equipment.

Despite negative outcomes, organizations may still cling to what they know and do best: decreasing experimentation while increasing reliance on existing practices (Gilbert, 2005). The underlying strategic liability associated with this is negative learning—the increasing distance between beliefs and the true outcome (Oppenheimer, O’Neill, & Webster, 2008). In this context, unlearning—discarding and/or replacing obsolete or faulty routines (Hedberg, 1981)—is particularly difficult. In routine work contexts, institutionalized practices can create barriers to future organizational learning (Schilling & Kluge, 2009), upset the appropriate balance of exploitation and exploration, and limit absorptive capacity (Cohen & Levinthal, 1990).

In engineering contexts, institutionalized practices can provide strategic benefits by promoting access to deep technological knowledge and resources (McEvily & Chakravarthy, 2002), fostering error reduction (Vogus et al., 2010), encouraging high-quality product design (Luo, 2011), strong environmental performance (Russo & Harrison, 2005), and prevention of occupational hazards (Barnett & King, 2008). Institutionalized practices provide a platform for expanding absorptive capacity (Cohen & Levinthal, 1990) and operating effectively in sophisticated technological environments. As an example, organizations with a reputation for offering a safe work environment based on enforcing strict regulations and exacting standards may attract higher quality human capital than rivals with lax rules, especially if the nature of the work is dangerous. Offering the safest, most long-lasting products, especially for durable goods, such as cars or heavy machinery, can create brand loyalty. Similarly, evidence-based medicine and institutionalized behavior protocols provide means for navigating complicated, multifaceted, and individualized health care decisions (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996).

In engineering settings, organizational practices are typically installed to facilitate effective workflow, decision heuristics, and the immediate detection of problems. As in routine settings, reliance on outdated practices or mindless implementation may result in strategic liabilities, such as core rigidities, inertia, negative learning, and overlooking shifts in important contingent conditions. Unspecified or erroneous technical knowledge can create serious adverse conditions and outcomes. Unlearning may be inhibited by external circumstances, such as the persistence of governmental policies, standards, or regulations, or by the sheer volume and depth of knowledge needed to master the necessary knowledge-in-practice. For example, Oppenheimer et al. (2008) contend that early—and inaccurate—measurements of ozone depletion during the 1970s (a time during critical policy formation) slowed regulation development against aerosol spray and halocarbon production. Though organizations may be able to discard such practices, industry norms or governmental debates may make it difficult to immediately abandon what is socialized as prevailing wisdom. If ineffective practices are not unlearned quickly, organizations often face serious consequences, such as reputation damage, recall costs, lawsuits, or even loss of lives.

In craft contexts, the primary strategic benefit for institutionalized learning comes from encoding practices that further develop tacit knowledge and skills that set an organization apart from its rivals. The goal is to maintain practices that are valuable, rare, inimitable, and nonsubstitutable (Barney, 1991). Coff, Coff, and Eastvold (2006) argue that institutionalized practices enable organizations to achieve scale advantages by deploying knowledge without codifying it thus maintaining difficulty in appropriation or imitation. Institutionalized practices can also serve as a foundation for professional development, job design, talent management, developing internal social capital, and nurturing communities-of-practice.

Without engaging in sufficient exploration, organizations that operate in craft contexts with institutionalized and highly specialized practices face strategic liabilities, such as myopia (Levinthal & March, 1993) and competency traps. Organizations may be prone to clutch at familiar mental models and schema to interpret the few exceptions that arise. Instead of devising new organizational practices to approach unanalyzable problems, myopic organizations
Rely on and further entrench their known competences. Because specialization and professionalism are such a significant part of the organizational identity of employees in craft settings, community relations often reinforce institutionalized lessons. Since many of the institutionalized lessons in craft settings rely on experiential learning leading to tacit understanding, institutionalized practices are particularly resistant to unlearning or modification.

In nonroutine technology settings, institutionalizing practices can provide the basis for flexibility enabling the organization to react quickly to surprises and environmental change. For example, instead of focusing on just one generation of chip, Intel works on several at a time in order to intentionally upset rivals (D’Avent, 1999). Success often depends on an organization’s ability to “predict, detect, and deal with rare and unusual events” (Beck & Plowman, 2009, p. 909) and resume work immediately. This can be accomplished through practices that develop shared task knowledge, common work flow expectations, and building cross-member expertise (Bechky & Okhuysen, 2011). Disaster relief organizations working to help Hurricane Katrina victims, for example, sought assistance from UPS. UPS’ company culture, efficient logistics practices, network of trucks and planes, and distribution centers provided a model that relief organizations could use to effectively self-organize under fluid circumstances.

Unanalyzable problems and contexts with many exceptions are more likely to depend on complex social interactions and relationships for learning to take place and a greater proportion of what is learned is likely to be difficult to articulate (or recognize). Under these conditions, institutionalized practices serve several purposes. First, organizations can establish practices that aid in the development of organizational resilience, which supports effective routines for scanning the environment and maintenance of strong relationships between employees and with external stakeholders (Lengnick-Hall, Beck, & Lengnick-Hall, 2011). These practices will be particularly beneficial for helping organizations notice and respond to change rapidly.

Institutionalized practices can also offset an organization’s lack of experience accumulation through deliberate learning processes that help managers cope with causal ambiguity (Zollo, 2009). Finally, institutionalized practices can serve as a foundation for participative and open leadership (Zollo, 2009) that promotes individual and collaborative problem solving.

In environments marked by ambiguity, uncertainty, and frequent change such as nonroutine contexts, numerous exceptions and unanalyzable solutions severely limit the ability of firms to build sustainable competitive advantages based on past strategic actions or feedback-based learning. For example, Lanzara and Patriotta (2007) explain how institutionalization helped create an effective workforce (through employee training, development of technical knowledge, and shared values), smooth worker–manager relations, successfully construct a new plant, and coordinate a productive assembly line. However, strikes erupted, worker participation declined, and frequent breakdowns occurred on the production lines when changes occurred that transformed the once routine, stable setting to a nonroutine context. Dynamic capabilities are not stable or easily sustainable processes (Eisenhardt & Martin, 2000). Though the illusion of control may offer a sense of security, organizational practices institutionalized to accommodate strategic persistence will likely result in an environment that interferes with strategic flexibility and quick responsiveness (Nadkarni & Narayanan, 2007). Studying a sample of U.S. bank mergers, Zollo (2009) found that rare and complex decisions based on accumulated experience may fog logical inferences and result in aberrant learning outcomes, such as superstitious learning. An inflexible organizational culture can suppress the recognition of individual solutions (audience learning). Unlearning is difficult because it is hard to link causal connections and isolate problem sources.

Strategic renewal requires a delicate and often fluid balance between exploiting institutionalized organizational learning and letting go of established wisdom to develop new insights, create innovative solutions to emerging conditions, or improvise new kinds of value. As we have discussed, institutionalized learning provides a firm foundation for organizational strengths and sources of competitive advantage. At the same time, institutionalization pulls an organization toward exploitation at the expense of further exploration. Different technology contexts (routine, engineering, craft, and nonroutine) promote the institutionalization of different kinds of organizational lessons. Consequently, each of these work settings introduces distinct advantages and liabilities that require differentiated strategies and skills to manage effectively.

The discussion of institutionalization presented here suggests that organizations would benefit from a more in-depth and unpacked understanding of what is collectively learned in different work contexts, what types of understanding are likely to become embedded, and how the particular benefits and liabilities of these diverse organization lessons are likely to facilitate and constrain strategic renewal. It may also be useful to take a step back in the organizational learning process and consider what types of organizational lessons are likely to emerge from integrating activities in each of the four work contexts. Integrating is the process of creating a shared understanding among a collective set of organizational members. Integrated learning can enable organization members to take deliberate, coordinated action, engage in purposeful mutual adjustment, and develop interactive patterns of behavior (Crossan et al., 1999; Crossan et al., 2011). The raw materials, or inputs, for institutionalizing processes in organizations are the learning outcomes of the integrating processes that...
have occurred. Both cognitive changes (changes in what organization member think or intuit) and behavioral changes need to take place for integrated learning to be achieved. Experimental learning refers to situations in which behavioral change precedes cognitive change and anticipatory learning refers to conditions in which cognitive shifts lead to subsequent behavioral changes (Inkpen & Crossan, 1995). Therefore, the first step toward understanding what can be institutionalized involves articulating the kinds of organizational learning outcomes that are available as ingredients for this process.

The nature of what is learned clearly influences the nature and characteristics of the systems, structures, routines, and procedures in which lessons can become embedded. For example, if what is learned is a procedure for maintaining the correct inventory of various parts (routine technology), learning outcomes can be codified, documented, embedded in data repositories and accessed through standardized software systems. Using these kinds of learning outcomes is largely impersonal. Mutual adjustments can be planned and standard procedures can be created for implementing them as conditions change. However, if what is learned is a way of relating to coworkers that enables effective collaboration (craft technology), learning outcomes are captured in social systems and behavioral norms that may be very difficult to standardize or codify.

In summary, we propose that the institutionalization of organizational learning occurs at the pivot point of the dynamic tension between exploration and exploitation. An appropriate balance between exploration and exploitation is one of the primary factors influencing an organization’s strategic renewal capabilities. As we have explained, the nature of institutionalized organizational learning varies depending on whether the work context must accommodate many or few exceptions, and whether the solutions to these exceptions can be derived from analyzable or unanalyzable search processes. Furthermore, we propose that these variations in institutionalized organizational learning influence both the forces shaping the dynamic tension and the subsequent effectiveness of an organization’s strategic renewal efforts.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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