

## 10 Improvisational bricolage: a practice-based approach to strategy and foresight

*Miguel Pina e Cunha, João Vieira Da Cunha and Stewart R. Clegg*

### Introduction

The tension between exploration and exploitation of knowledge is one of the most discussed topics in the strategic and change management literatures (Gersick 1991; Romanelli and Tushman 1994; Eisenhardt and Tabrizi 1995; Tushman and O'Reilly 1996). Too much of either is regarded as a bad thing: too much exploration and the risk is that there is too little that can be exploited routinely, as routines are projected into an uncertain and indeterminate future; too much exploitation and the risk is that as the knowledge assets wear out they will not be replenished in a present that is rapidly fading into a nonrenewable past. In this chapter we contribute to this discussion by explaining how improvisational bricolage allows organizations to integrate these two processes and by discussing an approach to foresight that supports the capability to engage in exploitative exploration.

The dilemma inherent to the relation between exploration and exploitation can be succinctly stated as follows. Exploitation is necessary because it allows organizations to reap benefits from present knowledge and past strategy. Exploration is necessary because it allows organizations to construct new knowledge, create new markets, and build new sources of competitiveness. Some strategy literature views these two approaches as opposites, stating that one can only be pursued at the cost of the other (see Sastry 1997), while some argues that both exploration and exploitation are necessary conditions for strategic viability in fast-changing markets (Levinthal 1997). The paradoxical relation between these two approaches to organization materializes in a number of central concepts in strategy research, such as the winner's curse (Miller 1993), the need for ambidextrous organizations (Duncan 1976) and the risks of an opportunity trap (see Paich and Sterman 1993). In this chapter we draw on the concept of improvisational bricolage to address how the paradoxical tension might be used productively. Improvisational bricolage can be defined as the practice of drawing on available resources to address challenges as they unfold (Weick 1993; Cunha et al. 1999). When engaging in this practice, organizations are able to integrate exploration and exploitation into a mutually constituted duality, instead of keeping them as two poles of a dualism. We explore the consequences of this role of improvisational bricolage in both strategy making and foresight.

We start by summarizing the tension between exploration and exploitation before discussing how improvisation can turn this tension into a mutually reinforcing dynamic. We end by looking at how improvisation allows for real-time foresight, the process through which organizations make sense of their future as they deal with present competitive challenges.

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### Exploration versus exploitation

The difference between exploration and exploitation is deceptively simple to explain. Exploration is about seeking new sources of revenue. Organizations explore in the future perfect tense, when they strengthen their competitive position by entering new markets or creating new opportunities, which they imagine in terms of positive outcomes; thus, exploration concerns developing current strategies designed to optimize revenue and organizational activity in the future. Organizations exploit here and now; in classical theories of surplus value it is present-day exploitation of labor and its knowledge which enables profit to be realized. In contemporary theories, organizations exploit not just by securing additional value from existing resources, such as labor, usually through improving the capital to labor ratio in the form of technological inputs, but by other means of increasing revenue or reducing costs in current markets.

Theoretically, both exploration and exploitation are time dependent: the former on an as yet unrealized future perfect, the latter on a present which, the longer it remains as it is, will be imperceptibly ebbing with increasing velocity into a past which will threaten the organization's survival. The subtlety is that the past is continuously being prepared in the present. Insufficient exploration renders the present into a future past full of missed opportunities; insufficient exploitation in the present renders the future imperfect as a past that scuttled the best-laid plans. An excess of exploration leads organizations to spread themselves too thinly across a number of opportunities, succumbing to an opportunity trap (Miner et al. 2001). These organizations have the right product ideas for the right markets but lack the commitment and often the resources to produce and market their ideas efficiently enough to make them competitive. To caricature, exploring organizations may be designing an increasingly better product that no one can afford. For exploitation, the passage of time means obsolescence. Organizations excessively specialized in exploiting are highly efficient at making and marketing their products, but they lack the commitment and resources to innovate and follow shifts in market needs and wants, succumbing to a simplicity trap (Kelly and Ambrugey 1991). At the extreme, organizations focused on exploitation can be increasingly efficient at making a product or delivering a service that is rapidly diminishing in use value. And, just as Marx ([1844] 1975) argued for production so it is for consumption: when the use value of knowledge and features embodied and embedded in either products or services diminishes, the surpluses that it can yield decline precipitously.

Ideally, organizations should be able to combine exploration and exploitation in their strategy. However, this integration is difficult to achieve. The best-known attempt to do so is the concept of the ambidextrous organization (Duncan 1976; Tushman and O'Reilly 1996). An organization is said to be ambidextrous when it has a portfolio of units where some are focused on exploration, and the others are focused on exploitation as a result of deliberate top management choices. 'Exploitation' units provide resources for 'exploration' units to seek new sources of revenue and competitive advantage. If an 'exploration' unit is able to generate revenue, then it is transformed into an 'exploitation' unit to fund further exploration. Such an approach is problematic both practically and theoretically. In practice, such an arrangement succumbs to the political dynamics of organizations (Jackall 1989). Managers are loath to lead exploring units because, even in cultures that tolerate failure as a source of learning, there is always more political clout to be gained from success. In the future they may control the necessary nodal points through which

success passes, but right now they are desperately seeking for those ways to the future that they should stabilize. Those few organizations that have adopted the ambidextrous form (for example, Microsoft and Hewlett Packard), have turned their 'exploring' units into permanent research centers. Although some knowledge spillovers occur between these units and the 'exploitative' units, most mainstream innovations and new markets come from deliberate search efforts conducted by the 'exploiting' side of the organization (von Hippel 1987). Such an approach neither conceptually nor practically integrates exploitative and exploratory learning. Instead, it separates them as two opposites by locating them in different nodes of the organization (see Poole and Van de Ven 1989). As a solution it fails for all but the most resource-rich organizations. First, it is difficult to apply to small organizations because these seldom have the breadth of resources necessary to sustain several units with different stances (see Mintzberg and Waters 1982). Second, as a result of divorcing exploration from exploitation nodes, some organizations may fall into a simplicity trap, where a simple strategy fails to adjust to changing environmental conditions and others an opportunity trap, where potential innovations are spurned because they do not seem to fit with the way that node defines present realities. To avoid these nodal blockages, top management has to foster a level of communication among exploratory and exploitative units that is very difficult to achieve in practice (Morrow 1981).

#### **Improvisational bricolage and strategy**

Improvisational bricolage allows organizations to integrate exploration and exploitation at the level of practice, thus ensuring that these processes are continually in a relationship of mutual constitution. Improvisational bricolage is a practice that thrives on novelty and aims to generate innovation. However, it differs from other change-inducing practices in that it draws on available resources and skills. It is thus an exploitative form of exploration (Barrett 1998).

#### *Improvisational bricolage as exploration*

Improvisational bricolage came into organization studies via jazz. Modern jazz thrives on creativity, non-repetition, and switching between loosely coupled soloists, who, to challenge each other, extemporize and improvise around any given chord structure with a sometimes ferocious intensity. In doing so, the musicians in an ensemble (such as the Ornette Coleman Trio or one of the many great Miles Davis ensembles) have to understand how to address the unexpected, urgent and important challenges that their collaborators will develop. Adapted from jazz to organizational practice, improvisational bricolage seeks to use even the smallest of challenges to produce innovation and change the organization's strategy, even if only through very small increments (Crossan et al. 2005). Thus, in fast-changing environments in which organizations need to address competitive challenges quickly if they are to remain viable, improvisation is an especially effective approach. Improvisation allows organizations to use challenges to craft a strategic theme that allows them to follow an incremental path to radical change (Eisenhardt and Tabrizi 1995). Thus, the jazz metaphor is apposite: the chord structure of 'How High the Moon' became the basis for an entirely new theme, 'Ornithology', in Charlie Parker's hands, diverting his fellow soloists from any plans they might have had based on the original chord structure. In fast-changing competitive environments, there is simply no time to plan and the equivalent of the chord structure – the underlying themes – change

rapidly. Research on crises in competitive environments has consisted in drawing a chart for all the internal and external environments (Brews and Baskerville 1989) that the uncertain nature of the environment makes strategic planning because many uncertainties are needed for this process. In fact, none of the players are as many inventors as planners; others will languish in the uncertainty and innovation. Studencki and McHugh (1985) have shown that the most effective mode with a competitive markets. There is plenty of anecdotal evidence to support this, meaning one that if an organization is not planning and forfeiting long-term strategy, it is arguing for this approach of an organization (Levinson 1997). A deliberate and planned strategic path of an organization is shown in charts of a Stan Kenton band and Archie Shepp sessions. A long-term consistent strategy underemphasizes the theme of a long-term consistent strategy. The theme of some of Coltrane's sessions is an explicit strategy are with avant-garde strategy concepts and systems whose evolution is dynamic beyond the grasp of a long-term consistent strategy.

Research on improvisation in competitive environments (Crossan et al. 2005) understands improvisation as a common sense of the choice of path through the challenges of the environment. Organizations are not only responding to those challenges and the competitive environment but also using bricolage, planning and action to respond to competitive challenges by building in such a way as plans are used to enable action, keeping players' threats and opportunities in mind (Levinson 1997). Sensemaking in

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rapidly. Research on crises, new product development and competitive dynamics in such environments has consistently shown that strategic planning – the business equivalent of scoring a chart for all the instrumentalists – is too slow a process to be of any use in such environments (Brews and Hunt 1999; Reppenning et al. 2001). Some studies even suggest that the uncertain nature of fast-changing markets forecloses the very possibility of strategic planning because market conditions are very difficult to pin down with the accuracy needed for this process. In such conditions, equivalent to an avant-garde jazz performance, none of the players appears to be following the same, or indeed any, script: there are as many inventors as players who will sometimes hit rich and rewarding themes while others will languish in the margin, missing the opportunities to fly high with their creativity and innovation. Studies such as those of Lane and Maxfield (1996) and Mintzberg and McHugh (1985) have shown the inadequacy of planning to advocate action as the most effective mode with which to deal with competitive challenges in fast-changing competitive markets. There is some empirical evidence (for example, Eisenhardt 1989) and plenty of anecdotal evidence (for example, Peters 1992) for the merit of an action orientation, meaning one that focuses on addressing each threat and opportunity as it comes and forfeiting long-term strategy making as an impossible, if not futile, exercise. Authors arguing for this approach emphasize the role of emergent strategy in deciding the course of an organization (Levinthal and Warglien 1999). They underscore the small impact of deliberate and planned strategies relative to everyday adaptations in defining the actual strategic path of an organization. In jazz terms, the contrast is between the tightly written charts of a Stan Kenton big band and the loose improvisation of the late John Coltrane and Archie Shepp sessions. However, if the planning approach overemphasizes the value of a long-term consistent strategy, or the tightly scored charts, then the action approach underemphasizes the thematic utility of some underlying structure, as many critics would allege of some of Coltrane's late, most avant-garde, works. Any attempts at systematizing an explicit strategy are written off as futile (Anderson 1999). In organizational terms, an avant-garde strategy conceptualizes organizations and their markets as self-organizing systems whose evolution is, at the same time, a product of the player's actions and a dynamic beyond the grasp of any single agent.

Research on improvisational bricolage, in line with the action approach, sees pre-defined plans as being of little use in guiding organization action in fast-changing competitive environments (Crossan 1998). However, in line with the planning approach, improvisation understands the value of a shared conception of competitive dynamics – a common sense of the chord structure underlying improvisation – and the organizations' path through the challenges presented by fast-changing markets. When they improvise, organizations are not only responding to urgent challenges, they are also making sense of those challenges and their improvisations to craft a dynamic understanding of their competitive environment and their own path in it (Weick 1987). In improvisational bricolage, planning and action are mutually constituted. Action is taken not only to address competitive challenges but also to make sense of the competitive environment. The interpretations built in such a way are, however, not used to constrain action in much the same way as plans are used in the planning approach. Instead these interpretations are used to enable action, keeping the organization flexible enough to take advantage of other players' threats and opportunities to innovate creatively and successfully (Eisenhardt 1997). Sensemaking in improvisation is centripetal, not centrifugal.



Improvisational bricolage is also distinct from the planning and the action approaches in how it approaches threats and strategic mistakes. Both the planning and the action approaches interpret threats as negative (Starbuck and Milliken 1988). Threats are to be eliminated: they distract the organization from its plans, and divert its members from taking advantage of competitive opportunities. Threats are crises that the organization needs to address to return to routine just as many big bands found that the soloing proclivities of emergent Bop players threatened the orderly business of producing dance-hall routines; thus, whether that routine is implementing a plan or taking whatever action is needed to change and innovate, deviation from it is perceived as a threat (Ashmos et al. 1997). In improvisation, competitive threats are as valued as opportunities (Kamoche and Cunha 2001). (A band such as the mid-1960s Miles Davis Quintet was metaphorically fired by the prodigious threats to rhythm of the young Tony Williams.)

Improvising organizations do not interpret threats and opportunities as one and the same. Research has shown that improvising organizations see threats with the same sense of alarm as do planning and acting organizations. However, improvising organizations look at threats as opportunities to disturb routine practices that members have slipped into, without much reflexive everyday awareness. Improvising organizations look at threats as opportunities to increase their members' motivation and commitment to innovation and change (Peplowski 1998). Threats are also interpreted as opportunities for a quantum leap in the organization's competitive position. If a threat affecting the players in a competitive context is used as an opportunity to craft a unique competitive position, the other players in the market will suddenly be faced with a loss in their competitive position which outweighs the original threat (Eisenhardt and Bourgeois 1988).

Improvisational bricolage is also different from the action and the planning approaches in how it uses errors. In the planning approach, errors are due to either inaccuracy in plans or failure in implementation. Inaccuracies in plans are deviations to be corrected by redesigning the planning process so that competitive information is more accurate and so that it is used more effectively in mapping the organization's future (Miller and Cardinal 1994). In the action approach, errors represent lost opportunities or breaches in the organization's resilience against competitive threats. They represent either a failure that becomes a threat in itself to be addressed immediately or a loss that needs to be recovered through future action (Sitkin 1992). Mistakes and errors are not rehashed. They are interpreted as an unavoidable cost of approaching competition through action. In improvisational bricolage, errors are seen as an important part of the process of innovation. As Weick put it, improvisation espouses an 'aesthetic of imperfection' (Weick 1999), occasions for improvisation inasmuch as errors can be starting-points for change and on-the-spot strategies. In improvisational bricolage, errors are thus not to be avoided or corrected. Instead they are encouraged and appropriated as a source of pre-emptive transformation.

Improvisational bricolage thus shares with exploratory approaches to strategy a focus on innovation and change as the driving forces in adaptation to fast-changing markets. It differs from both these forms of exploration in the extent to which it embraces change and innovation. Improvising organizations change not only when their competitive environments present them with opportunities to do so but also when they are faced with threats either from competitive dynamics or from their own errors.

*Improvisational bricolage*  
The feature of improvisational bricolage is its use of whatever is available to approach the focus is strategy (Beer 1996; Beer 1997). This approach emphasizes the means and goals of change in the process. The difference separating exploitation and improvisation is that exploitation focuses on the fit between the current state and change, and on the difference separating the current state from the goal, whereas exploitation focuses on the fit between the current state and the goal.

Improvisational bricolage is a relationship of non-exploitation. Organizations do not seek new resources in new contexts. The chord structure of 'Hallelujah' is improvisational bricolage. It explores, improvises, and then takes advantage of the resources repeatedly but not repeatedly.

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Fast-changing markets organizations to meet. Even when these resources through formal resources and to learn how to use is entrained with the resources that are already available. Improvisational bricolage with the tools and materials familiar and skilled (Johansen) to take advantage of the resources with competitive dynamics resources, members of unexpected strategic

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*Improvisational bricolage as exploitative exploration*

The feature of improvisational bricolage that allows it to integrate exploration and exploitation is its use of existing resources for change and innovation. In the planning approach the focus is on acquiring and developing the optimal resources for each strategy (Beer 1996; Beer and Eisenstat 2000). When planning for change and innovation, this approach emphasizes the need to ascertain the resources that fit with the process and goals of change and innovation and put those resources in place before launching this process. The action approach has a similar interpretation of resources (Pascale 1984; Stocum et al. 1994). When responding to competitive challenges through action, organizations need resources fit for the task. However, this approach downplays the need to obtain these resources through formal processes and channels. Instead it emphasizes members' ability to obtain these resources through informal processes and channels. Focusing on the fit between, on the one hand, the goals and the process of innovation and change, and on the other, the resources available to the organization, is a defining difference separating exploration from exploitation. Exploration requires new resources whereas exploitation entails the repeated use of existing resources.

Improvisational bricolage turns this dualism between exploration and exploitation into a relationship of mutual constitution (see Giddens 1986). When improvising, organizations do not seek new resources to change and innovate. Instead, they seek to use available resources in new ways (Berry and Irvine 1986; Cunha and Cunha 2001), such as the chord structure of 'How High the Moon'. The process of change and innovation through improvisational bricolage turns into a process both exploratory and exploitative. As they explore, improvising organizations use the same resources in multiple ways, deploying them to take advantage of multiple competitive challenges. Available resources get used repeatedly but not repetitively, maximizing efficiency while striving for effectiveness.

Improvisational bricolage is an adaptive use of resources in fast-changing competitive environments because it matches the time pressure and the bias for action imposed by such contexts, while matching the complex nature of their market dynamics.

Fast-changing markets seldom allow the time needed to procure new resources by organizations to meet demands raised by competitive challenges (Eisenhardt 1989). Even when these resources can be procured informally, without wasting time by going through formal resource allocation processes, time is still needed to activate informal ties and to learn how to use them (for example, Lanzara 1983). Improvisational bricolage is entrained with the dynamics of fast-changing markets because it draws on resources that are already available and familiar to organizational members. When engaging in improvisational bricolage, members make do with their available resources, that is to say with the tools and materials that they use in their everyday work and with which they are familiar and skilled (Johnson and Rice 1984). Improvisational bricolage allows members to take advantage of resources that are already available locally at their point of contact with competitive dynamics (Machin and Carrithers 1996). By making do with everyday resources, members are able to draw on tacit knowledge to engage in important and unexpected strategic challenges.

Improvisational bricolage is a challenging practice. As Weick (1996) and others (for example, Orlikowski 1993a) have shown, using everyday resources in new ways and to address new challenges is far from being a trivial process. Instead it is a demanding creative process that can only be learned through practice, and that varies among individuals

(see chapters in Heath and Luff 2000). Moreover, this challenge is not only cognitive but also emotive inasmuch as it calls upon members to bricolate with artefacts that are attached to their professional identity (Kondo 1990). Indeed, whereas members do not use most of their work tools and materials to make sense of their professional trajectory and identity, some artefacts are used to this end. These artefacts and their use are central to members' professional identity. Therefore using them in ways other than those sanctioned by members' views and enactments is very challenging (Weick 1996), due to the level of creativity that novel uses require. However, much of the difficulty resides in employees experiencing increased uncertainty in their professional identity through novel uses of what have been identity-rich tools and materials (Whyte 1948; Gouldner 1954; Goffman 1967). Improvisational props lose their old meanings and what their new ones are is uncertain. Improvisational bricolage is nonetheless a practice attuned to fast-changing markets because creativity and identity challenges are addressed in action. The creativity and identity work that bricolage demands are socially enacted as members jointly take advantage of opportunities, threats and imperfections to innovate and change (Orr 1990). Identity challenges are situated and thus do not require any enduring changes to the way members make sense of themselves nor do they require any enduring changes to the way members present themselves to others (Thevenot 1999). As far as identity goes, bricolage is more flexible than any other approach to competitive challenges.

There is another important feature of bricolage that makes this especially fit for fast-changing competitive environments – the match between the uncertainty and complexity of such contexts and the indetermination of resources. If there is a feature that distinguishes competitive challenges in fast-paced markets from those in other competitive contexts, it is their level of complexity and uncertainty (Hedberg et al. 1976). Fast-changing markets are complex environments in the sense that they challenge organizations with an erratic flow of incremental opportunities and threats that in time interact to provoke discontinuous peaks of creative destruction (Foster and Kaplan 2001). These moments of creative destruction are seldom independent environmental occurrences. Instead, these discontinuities are the outcome of the interpretation of sets of incremental changes in competitive dynamics (Kiesler and Sproull 1982). These interpretations are enacted in episodes of creative destruction in two ways. In some cases, organizations interpret their environments as undergoing a discontinuity and fall into a self-fulfilling prophecy (Haveman 1992). In such instances, organizations take a discontinuity for granted and act on it as if it were an objective market dynamic. In other cases, an organization, or a small set of organizations, interpret incremental market changes as a consistent business opportunity. In such instances, the process of creative destruction is intentionally triggered by a set of organizations as they attempt to reap the benefits of a creative interpretation of market dynamics (Christensen 1997).

Both processes of creative destruction underscore that competitive dynamics are the outcome of a structuration process (see Giddens 1986). This means that competitive dynamics result from the interplay between discrete market changes and the way organizations interpret those changes and incorporate them into their strategy (Daft and Weick 1984). Market dynamics shape organizations both to the extent that organizations enact and pay attention to those changes, and in the ways in which they transform the conditions within which sense is made, even if the same old sense continues to be made until the changing circumstances sabotage it completely. The specific features of

the way market dynamics which organizations use the path they choose to members enact market as they act on them and of their situated decision (1987). Organizations can beforehand and if comp knowing in and by their (Ansoff et al. 1970). Org make sense of market dy evident in the flows and. and stakeholders, which organizations to achieve tions to change their res curing new resources bu given resources have ne artefacts that agents use course, just as the mem perhaps of other, comp more successful. As mer where other organizati environments within w. enact effects themselves ments of others that ma nightmares – about. Bri with the dynamics of e constitutive relationship

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is not only cognitive with artefacts that are created as members do not follow professional trajectories and their use are in ways other than those expected (Weick 1996), due to the difficulty of maintaining a professional identity through change (Myrte 1948; Gouldner 1954) and what their actions are a practice attuned to be addressed in action. It is enacted as members do innovate and change any enduring changes. As far as identity goes, challenges are especially fit for fast-changing and complexity is a feature that distinguishes other competitive conditions (Lippitt 1976). Fast-changing organizations with whom we interact to provoke change (Weick 2001). These moments of occurrences. Instead, of incremental changes interpretations are enacted organizations interpret self-fulfilling prophecy for granted and as, an organization, or a consistent business on is intentionally triggered a creative interpretation of competitive dynamics are means that competitive changes and the way their strategy (Daft and Weick 1985) the extent that organizations in which they transform sense continues to be. The specific features of

the way market dynamics shape organizations are the outcome of the process through which organizations use those changes to decide their future position in the market and the path they choose to reach it. Structuration of competitive dynamics is carried out as members enact market challenges (Eisenhardt 1997). Organizations interpret challenges as they act on them and thus make sense of competitive dynamics as they make sense of their situated decisions and actions and how these are received by the market (Weick 1987). Organizations cannot necessarily determine competitive opportunities and threats beforehand and if competitive challenges cannot be interpreted before organizations act, knowing in and by their acting, then they cannot decide, a priori, the resources needed (Ansoff et al. 1970). Organizations need to be able to shape their mix of resources as they make sense of market dynamics by enacting and acting on them. Market dynamics become evident in the flows and relations that surround and surge through organization members and stakeholders, which is exactly what the practice of improvisational bricolage allows organizations to achieve (Cunha et al. 2002). Improvisational bricolage allows organizations to change their resources as the competitive situations they face change, not by procuring new resources but by putting available resources to new uses (Weick 1993). Thus, given resources have neither objective features nor canonical purposes. Instead, they are artefacts that agents use with specific properties enacted in their uses (Suchman 1987). Of course, just as the members of any given organization enact some uses other members, perhaps of other, competitive organizations, enact other uses that may, in the future, be more successful. As members of any given organization enact, they do so within a context where other organizations are enacting artefacts, resources and meanings that shape the environments within which the initial enacting is being done; even as members do not enact effects themselves they cannot help but be themselves enacted within the environments of others that may shape them in ways that they have not even dreamed – or had nightmares – about. Bricolage offers a structurational approach to resources that meshes with the dynamics of enacted and enacting environments, thus establishing a mutually constitutive relationship between exploration and exploitation.

#### *Developing improvisational bricolage*

Improvisational bricolage depends on practical skills and dispositions. New members of organizations acquire these by engaging in simple tasks and with little if any improvisational content, and progressively take on more demanding tasks in which improvisational bricolage plays a more important role. Newcomers are allowed and encouraged to work together with experienced members who model the skills and dispositions that newcomers are expected to acquire. Lave and Wenger (1991) term this 'legitimate peripheral participation', which they see as differing from other forms of learning because it integrates action learning and social learning in a centering learning process (that is, a learning process which matches increasing task complexity with decreasing task structure). Bricoleurs become improvisational through legitimate peripheral participation, developing their improvisational skills and disposition through embodied, distributed and situated practice (Bastien and Hostager 1991; Lewin 1998).

Improvisational bricolage often begins, experientially, as a material accomplishment that conceives creative solutions to competitive challenges by experimenting and enacting using available resources. Even when challenges and resources are nonmaterial, the central role that artefacts play in memory and cognition means that when carrying out



improvisational bricolage, employees use material resources to act on nonmaterial challenges as they unfold (Hutchins 1996). Learning to use resources in such a way sometimes involves more than knowing how to manipulate them, enacting a relationship between material artefacts and the body, pushing the bodily movements below declarative consciousness, into the realm of practical consciousness (Lave 1988). At this level, members can focus on improvising in terms of the challenges at hand without having to think about the specific manipulations they have to carry out with artefacts to perform those improvisations. The relationship between the body and local artefacts cannot be created away from the situated conditions in which newcomers, once they attain full membership, will carry out their everyday work because improvisational bricolage is a situated, 'sticky' skill that cannot be easily transported to different sets of conditions for action (von Hippel 1994). Newcomers thus need to engage in their actual work once they begin learning. The social nature of legitimate peripheral participation together with its commitment to a progressive escalation of the need to improvise allows newcomers to acquire the skill of improvisational bricolage *in vivo* but without jeopardizing the organization's goals. The corollary of these remarks is that organizations should develop 'hands-on' skills even among those who may ultimately be required to use their hands – and bodies – in other, perhaps less material, ways. As newcomers go through the increasing simplification of the structure of the process of legitimate peripheral participation, their disposition to engage in, and their skill at doing improvisational bricolage become increasingly situated (Brown and Duguid 1991).

The motivation to respond to a challenge through improvisational bricolage increases when employees have a stake in addressing a challenge. When challenges do not carry sizeable stakes for employees, alternatives to improvisational bricolage become more attractive. In such instances, employees 'fake' the resolution of competitive challenges – they improvise to create the representation of addressing those challenges, instead of improvising to address them head on (Cunha and Cunha 2001). As employees develop stakes in competitive challenges that they interpret as important, they often develop a disinterest for those challenges that are interpreted as being marginal to their everyday work (Bourdieu 1990; Ibarra 1999), encouraging a situated disposition for improvisational bricolage as newcomers are encouraged to focus on those challenges relevant for their role, and disregard others as less relevant. As they enact their role on a variety of increasingly demanding conditions for action, newcomers develop socially constructed classifications of situations which they draw on to support their improvisational bricolage (Bowker and Starr 2000). These socially constructed classifications include interpretations of importance, urgency and level of surprise, and views about resource uses, including culturally sanctioned accounts of likely flexibility and spatial deployment. Again, it is difficult to develop this skill outside everyday work and actual competitive challenges. Organizations can develop explicit classifications from members' categorization devices (Sacks 1972). As knowledge of the conditions for action becomes more institutionalized, then organizations can teach them to new employees. Those classifications that work best are appropriated in and from practice to incorporate the complexity that members experience in their everyday work and to match the interests that employees develop as they gain full membership (Orr 1990). When situations for action are classified in the course of everyday work, newcomers are able to appropriate them *in vivo*, as they observe others improvising to deal with competitive challenges. Moreover, the increasing level of

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complexity enforced by legitimate peripheral participation allows employees to develop increasingly complex interpretations of the different challenges that they face as they enact their role, allowing them to develop the skill to perform improvisational bricolage early on in their affiliation to the organization without rendering them useless while they do so (George et al. 1995).

#### *The routinization of improvisational bricolage*

Improvisational bricolage allows not only for integration of exploration and exploitation in action but also their integration in the organization's structure through the routinization of specific improvisations. Routinization of improvisation is, in essence, evolutionary (Aldrich 1999). As employees enact specific improvisational bricolages, some of these improvisations are likely to become a routine as they are enacted in different conditions for actions and adopted by different groups of people. These improvisational bricolages are those that are enacted frequently enough to be able to command the necessary procedural memory to be retained (Moorman and Miner 1998b), and which become a part of the behavioral repertoire of devices with which members classify and confront their organizational worlds. Other instances of improvisational bricolage that are enacted less frequently or with limited visibility to others are more likely to be forgotten due to the limitations of human memory (Anderson 1983). As an evolutionary dynamic, a population of entities (procedures, be they instances of improvisational bricolage or not), compete for limited resources that each entity needs for survival (memory); in the process, there are identifiable mechanisms for variation, selection and retention of entities in the population, whose parameters are set at a macro-population level (Van de Ven and Scott 1995). Entities in this population are procedural routines, improvised or not, that address the variety of tasks the organization has to handle over time. The limited resources for which procedural routines compete are memory and usage. If a given routine is not used for a considerable time it is likely to be gradually dropped from memory because of human and organizational cognitive limitations, bounding rationality, and hence will become redundant (Tversky and Kahneman 1974; Moorman and Miner 1998a). Mechanisms of variation, selection and retention do not only relate to active consciousness and memory but also to those minimal structures supporting them (Brown and Eisenhardt 1997) that serve as centripetal but variety-inducing elements, through which members conceive novelty (Weick, 1998, 1999). By acting within the bounds of the minimal structure, organizational members are able to create the necessary variety for tackling urgent, unexpected and important competitive challenges demanding rapid action which, via sensemaking, allow for new procedural routines to emerge (Orlikowski 1996).

The selection of variations emerging from this process obeys a simple mechanism. If the improvisational bricolage appears to work, it will be selected; if it appears to fail, it will not (Barrett 1998; Crossan 1998). Of course, appearances are heavily socially nuanced and can often be deceptive. Retention comes from the storage of a newly created routine into procedural memory and its use in future problems and opportunities with a similar set of triggers, thus becoming a standard routine/procedure. Such usage may also take the form of bricolage when the routine becomes used as an input for creating new (composite) routines (Scribner 1986).

Those instances of improvisational bricolage that become part of the organization's memory, distributed across practices and artefacts, become standard, albeit unprescribed,

procedures for the organization which create new resources for improvisation by expanding the interpretation of current resources and their uses. They allow the organization to obtain what are de facto new resources without having to acquire them.

#### **Foresight as exploitative exploration**

The literature on foresight treats it as a specific instance of organizational exploration (Slaughter 1989, 1996; Godet and Roubelat 1996). Foresight is seen as a process through which the organization makes sense of the future and creates the conditions for a long-term, sustainable competitive position. Recently, it has been framed as a problem of managerial cognition in environments that change through punctuated equilibrium dynamics (Greeve 1998; Tripsas and Gavetti 2002). Research has shown that in such contexts, impending radical change sends many 'weak signals' that fail to catch the attention of managers of organizations that hold dominant competitive positions in an industry (Mendonca et al. 2004). Once the competitive actions producing these 'weak signals' accumulate into discontinuities in the bases of industry competition, dominant players are replaced by firms that have generated or quickly adapted to the innovations that define the new market landscape (Romanelli and Tushman 1994; Edelman and Benning 1999). The purpose of foresight is to take advantage of these competitive dynamics by reading 'weak signals' to anticipate discontinuities and either preempt them to defend the firm's current competitive position or put a strategy in place to ensure that the firm can ride the discontinuity to a dominant market position once the basis of competition shifts (Stubbart 1989).

There are three major processes to anticipate competitive dynamics, each matching an approach to competitive discontinuities. The first focuses on detecting and interpreting weak signals (Hodgkinson 1997), framing market discontinuities as changes that incumbents respond to or not. They are the outcome of the actions of new entrants into the industry which can only be preempted, but not generated, by established firms. These firms suffer from what Miller (1993) called the 'curse of success': they are unwilling and unable to imagine different futures for their markets and even to change if a new future presents itself to them. The only possible course of action in this case is to detect changes early so that they can be preempted by strategic action or acquisition. Executives need to detect these market discontinuities when they are only hinted at by 'weak signals' and decide how to act on them so as to avoid the threat that, imaginatively, they can be enacted to represent.

The second major process to anticipate competitive dynamics relies on market experiments to detect emerging changes in market dynamics (Brown and Eisenhardt 1997). This view interprets market discontinuities as opportunities that every firm in the industry can take advantage of, if they detect them in time. Discontinuities are the outcome of the interplay between organizations' actions and changing consumption patterns (Tushman and Anderson 1986). If incumbents leave these changes unaddressed, a tipping-point is reached that turns into a market discontinuity. However, incumbents can detect these changes by engaging in low investment experiments (probes) to interpret views of the future that they can seek to validate against their competitive environment. The goal is to help executives decide which experiments to conduct and design these probes to maximize their validity and the knowledge gained from the market (Cohen and Levinthal 1990; Miner et al. 2001).

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as relies on market experience (Eisenhardt 1997). This very firm in the industry are the outcome of the option patterns (Tushman and Leonard 1995). Addressed, a tipping-point is where incumbents can detect these to interpret views of the environment. The goal is to use these probes to maximize when and Levinthal 1990;

The third major process for anticipating competitive dynamics sees competitive landscapes as social constructions by industry incumbents, which can be changed through reinterpreting the bases of competition (Henderson and Clark 1990; Berger and Luckmann 1991; Dougherty 1992). Discontinuities are thus the outcome of companies enacting a different social construction of the market than that held by other industry members. If this reinterpretation of the competitive landscape is widely adopted in the market, those companies that fail to follow it will be left, at best, to serve a small niche of customers. Executives need to be able to re-imagine their industry and play not only an active but also a leading role in creating its future.

Overall, each of these three processes seeks to know what the future of organizations' competitive landscape holds for its incumbents. Foresight, in this view, is a window on a possible future which helps the organizations' top management team decide what to do in the present to achieve a sustainable and enduring competitive position – a future perfect. Independently of how the organization sees its future, the ultimate outcome of foresight will be a long-term strategic plan to ensure that the necessary resources are in place to sustain and improve the organization's competitive position in the future, without being distracted by strategic challenges in the present (McGrath and MacMillan 1995; Lane and Maxfield 1996). In this sense, foresight is an exploratory practice which seeks to carve a strategic path for the organization by preparing it for changes in market dynamics. If foresight is oriented towards discovering the future of the organization and away from discovering the future of the market, it can be used to integrate exploitation and exploration.

Independently of whether an organization is flexible and adaptive, flexibility and adaptability are part and parcel of employees' everyday practice (Mirvis 1998; Tyre and von Hippel 1999). As research has consistently shown, employees routinely adapt prescribed rules and procedures to customers' needs and demands (Blau and Scott 1962; Orr 1990). These micro processes of adaptation often include improvisations to match changes in situated interactions. These everyday improvisations are, however, often invisible to managers because the interpersonal and computer-aided information systems that managers use are not designed to capture unprescribed adaptations to prescribed processes and outcomes (for example, Orlikowski 1996). Nonetheless, if managers are able to observe these improvisations systematically, they not only learn about market changes first-hand but also learn about how these changes can be addressed and taken advantage of using the organizations' internal resources (Mintzberg and McHugh 1985). Drawing on existing company resources to make sense of the future and to address the challenges and opportunities that it harbors, enables foresight to integrate exploration and exploitation. To manage the organization's future in such a way is to delegate strategic cognition to employees, focusing on articulating and systematizing the knowledge they acquire in their everyday interactions with customers and competitors, and in sharing the improvisations they enact in these interactions (Brown and Duguid 1991). To look inside the organization to make sense of the future does not so much adopt an autopoietic view of markets as social constructions of specific organizations (see Maturana and Varela 1980) as take employees' ability to learn from everyday experiences seriously. Competitive intelligence is at least as abundant in the lower echelons of the organization as in its top management team (Mintzberg and Waters 1982; Ciborra 1996). Managers need only to create processes that allow them to access this information



and make sense of it, developing heterarchical spaces rather than blocking these through hierarchical conduits (Fairtlough 2005), so that employees can craft strategies as the organization's environment changes (Kidder 1981; Dutton et al. 2001). The emergent side of strategy needs to be taken seriously and the situated improvisations of employees need to be acknowledged as constituting a strategy-making process whose collective intelligence is capable of addressing strategic challenges more effectively than a top-down planning process could ever hope to produce (Hedberg et al. 1976; Picken and Dess 1997). The managers' role in the foresight and strategy process is not simply to craft a strategy, relying on simplified inputs. Instead, their role consists in making others' improvisations visible to the organization so that they can be adopted and appropriated by employees addressing similar strategic challenges.

### **Institutionalizing Improvisations**

There are two approaches to managing exploitative and exploratory forms of foresight: formalizing improvisations and formalizing diffusion. When formalizing improvisations, the managers' role is to learn about and prescribe improvisations (Orlikowski 1993a, 1993b). Learning about improvisations is difficult. Improvisations are variations on prescribed practice and can thus be interpreted as a threat to managers' professional sense of self-worth and their identity. Prescribed procedures are, after all, sanctioned, if not designed, by managers. Deviations from them can be seen as a negative comment on managers' ability to make and implement those processes that best serve organizational goals (see Goffman 1969). This means not only that managers may be unwilling to learn about improvisations but also that employees may be reluctant to make these practices visible to avoid challenging the managers directly. Learning about improvisations requires what Weick (1999) called an 'aesthetic of imperfection', a culture that values and celebrates errors and deviations. Such a culture is a necessary condition for managers to see improvisations, but it is not sufficient. An aesthetic of imperfection makes managers willing to seek and value employees' improvisations, but it fails to address the challenge of actually finding them in the organization. Research suggests that it is hard to find a more effective way of seeing employees' improvisations than being close to their work (Suchman 1995). Even when employees use sophisticated information systems, improvisations are hard to detect (Orr 1990). Some studies suggest that formal knowledge management systems may help, but this information is likely to be more limited than first-hand observation (Lyles and Schwenk 1992). Prescribing improvisations to other organizations is also difficult. Improvisations can hardly be made explicit, especially if its element of bricolage is an embodied practice not easily transmitted outside joint action (Orr 1990). The managers' role in spreading foresight is closer to that of crafts masters who teach and learn from their apprentices as they attempt to continuously enhance the competence, knowledge and skills of their workshop.

When formalizing the diffusion process, managers focus on making sure that employees have an opportunity to share their improvisations with each other. Their role is to create and maintain the organizational conditions to support improvisation and to ensure that it is shared across the communities of practice in the organization (Hedberg et al. 1976; Kamoche and Cunha 2001). In this approach, the challenge for managers is to relinquish most of their control over the strategic process – a considerable identity challenge, inasmuch as control is at the core of the social construction of the managers'

role. Formalizing the diffusion process has shown to have disastrous results. Installing a minimal structure that is created through improvisation is not easily constituted by constraints but prescribes when outcomes are reached, attempting to create a consensus, attempting to create a section and a bias for a particular outcome but need managers who can make employees' identity as a content of foresight and an organization is able and

### **Conclusion**

The purpose of this chapter is to explore strategic exploration and integration between the two. In pursuing this, the goal was to explore the exploitation debate, seen through the process of

Integrating exploration and foresight in the strategic competitive contexts. In attempting to assemble a change the strategy of a competitive position if weak signals embedded in level adaptations hold: situated attempts to dechallenge is to understand signals and make sense the challenge is to lead diffuse successful instants to follow and even anti-lage and engaging in innovation are able to nurture these new futures.

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role. Formalizing the diffusion process is not, however, an effort at organizational design. Research has shown that attempting to 'design' emergent groups often backfires with disastrous results. Instead, formalizing the diffusion of improvisations means creating a minimal structure that guides and energizes the emergent process of strategy making through improvisation without constraining it (Weick 1993). Minimal structures are typically constituted by compatible goals, such as deadlines, which do not prescribe outcomes but prescribe when outcomes need to be achieved. They are structures that foster minimal consensus, attempting to maximize variety and diversity by creating the conditions where these can thrive without causing entropy or dissipation, such as an aesthetic of imperfection and a bias for action. Such structures are not easily put in place and maintained but need managers whose leadership enforces these minimal requirements and draws on employees' identity as a motivator for improvisation. These managers push down the content of foresight and focus on managing its process. Their goal is to ensure that their organization is able and willing to find its futures as its present unfolds.

### Conclusion

The purpose of this chapter was to contribute to the literature on the tension between strategic exploration and strategic exploitation. Our contribution was to bring the integration between the two poles of this tension to the level of everyday action. In accomplishing this, the goal was to complement other approaches that address the exploration/exploitation debate, seeking integration through macro-level organizational design and through the process of deliberate strategy making.

Integrating exploration and exploitation at this level raised the issue of the role of foresight in the strategy process. Foresight has been declared obsolete in fast-changing competitive contexts. Indeed, it is challenging to rely on foresight as a practice focused on attempting to assemble the future of the organization from weak signals in the market to change the strategy of organizations. However, managers can strengthen their company's competitive position if they help the organization to look inside and find its future in the weak signals embedded in everyday instances of improvisational bricolage. These micro-level adaptations hold not only hints about the future of competitive dynamics but also situated attempts to deal with the challenges this future will bring. For researchers, the challenge is to understand the practices that managers draw on to learn about these weak signals and make sense of them to enact their organization's futures. For practitioners, the challenge is to lead their organization in a way that enables them to learn from and diffuse successful instances of improvisational bricolage, thereby creating the conditions to follow and even anticipate changes in their market. Fostering improvisational bricolage and engaging in inward-looking foresight is not easily accomplished, but if managers are able to nurture these practices they open the possibility of learning about and creating new futures.

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