

ORGANIZATIONAL IMPROVISATION

MIGUEL PINA E CUNHA

Universidade Nova de Lisboa

Faculdade de Economia

Rua Marquês de Fronteira, 20

1099-038 Lisboa - Portugal

E-mail: mpc@feunix.fe.unl.pt

JOÃO VIEIRA DA CUNHA

Universidade Nova de Lisboa

Faculdade de Economia

Travessa Estêvão Pinto

1099-032 Lisboa - Portugal

E-mail: jvc@fe.unl.pt

KEN KAMOCHE

City University of Hong Kong

Tat Chee Avenue

Kowloon – Hong Kong

E-mail: mgnkk@cityu.edu.hk

ORGANIZATIONAL IMPROVISATION: WHAT, WHEN, HOW AND WHY

ABSTRACT

In this article, the authors review the growing body of literature on organizational improvisation in order to present an encompassing and systematic perspective on this concept. An integrative definition of its construct is presented together with a new way to measure this phenomenon in organizational settings. The article further explores this construct by presenting its triggers, necessary conditions, influencing factors and major outcomes. The issues that improvisation's growing legitimization in the organizational arena for practitioners and researchers alike are addressed in order to argue for the need and interest of a fuller development research on this concept.

Realized organizational strategies and actions, be they a new product development, a major corporate restructuring or entering a new market do not solely depend on the organization's deliberate options and explicit or even implicit intentions. Complexity and chaos theory have shown that, in addition to the unpredictability of the environment (Emery & Trist, 1965), organizational actions can have unintended – and unexpected – consequences (Stacey, 1996).

In spite of the ineffectiveness of traditional control mechanisms on this emergent share of organizational action, it can have a strong impact on its performance outcomes (Mintzberg & McHugh, 1985; Mintzberg & Waters, 1982). Therefore, organizations cannot let it go untamed, at the risk of having but little control over the impact of their decisions. Organizational improvisation has been emerging as a possible answer to this challenge, by allowing companies to subdue, at least partially, the emergent part of their actions, and even environmental fortuities, to their own will. In this vein, a growing number of organizational researchers are starting to take improvisation seriously and a number of texts on this topic have already been published. Nonetheless, as we will argue later, these texts are still to agree on a sound definition of this concept –let alone any robust findings on its occurrence in organizational settings (Weick, 1998).

This article is an attempt to fill this gap by drawing on the existing body of literature addressing organizational improvisation in order to present a formal definition of its construct and a comprehensive review of its antecedents, influencing factors and outcomes. To accomplish this goal, we will first outline what has been the recent history of research on organizational improvisation and then address the issues of what does this construct mean, when does it happen, how is it performed and why

should organizations do it, not without considering the challenges this concept raises for researchers and practitioners alike.

THE (SHORT) HISTORY OF ORGANIZATIONAL IMPROVISATION

A striking characteristic of the literature on organizational improvisation is its low degree of cumulativeness, making it difficult to compartmentalize its development, although it has already undergone through several stages. In an attempt to tackle this challenge, we divided authors on this topic in two generations, and its conceptual evolution into three stages (see table 1).

Insert table 1 about here

First generation authors ground their study of improvisation in research of this phenomenon in the arts, especially in jazz music, due to improvisation's centrality in it. Second generation authors draw on anecdotal and empirical evidence from the business arena to study this phenomenon directly, although occasionally recurring to jazz as a metaphor, although in a much lighter fashion than their first generation counterparts.

The first stage of theory development in organizational improvisation was, in essence, an attempt, by first generation authors, to transpose to organizational contexts the characteristics of improvisation and bricolage in jazz and improvisational theater, where this phenomenon is the norm. The contributions of this first stage of research on improvisation were, apart from fueling interest in the topic, the translating of jazz performance elements into the organizational arena and several lists of competencies that organizations should possess to be able to improvise effectively.

None of these works, however, systematically discussed the limitations of jazz and improvisational theatre as a metaphor for organizational improvisation.

The second stage of development of organizational improvisation departs from the former by taking improvisation away from the arts and into the field. Using anecdotal and empirical evidence (e.g. Crossan & Sorrenti, 1997; Moorman & Miner, 1995; 1998a; 1998b), emerging second generation authors develop formal definitions of organizational improvisation, show its relevance in current competitive environments and develop and test, mostly by means of grounded theory, propositions that aim at surfacing triggers and elements of this phenomenon in organizational settings. As a consequence, second stage articles allow improvisation to emerge as a 'proper' research topic and try to build the foundations needed to allow research of a more positivist fashion on it. Additionally, an unidimensional definition of improvisation emerges from these articles, focusing on the temporal distance between conception and execution that seems to be shared by all major authors. However, these still fail to address the limitations of jazz as a metaphor for the occurrence of this phenomenon in organizational settings. Empirical studies are limited to a somewhat small number of triggers and consequences of improvisation, which is still much of an organizational 'black box', allowing for a widening of the ratio between issues for further research and implications for the practice of management.

The third stage of development of the study of improvisation in organizational contexts witnesses a comeback from first generation authors, which surface some critical issues underlying second stage articles, drawing again heavily on jazz to question some of the outcomes of those articles, especially in what concerns the definition of organizational improvisation, that held a temporal perspective of this phenomenon. These authors deem this definition as too limited to be productive as far

as further research goes and to encompass the alleged broadness of this construct (Weick, 1998). They fail, however, to provide a new one, limiting themselves to quote from jazz theory (e.g. Weick, 1998) or to embellish second stage definitions (Hatch, 1997). Contrary to what has happened in other areas of social research (e.g. Gardner & Rogoff, 1990; Machin & Carrithers, 1996; Leinhardt & Greeno, 1986), organizational scientists, until now, seem to have waived the option of defining and studying improvisation in a way that suits their individual research targets, subjects and methods. Thus, Weick's will of 'not pushing jazz as much as [...] pushing improvisation' thus remains, even in later generations' (Hatch & Weick, 1998: 604) texts, a noble yet unfulfilled intention.

WHAT DOES ORGANIZATIONAL IMPROVISATION MEAN

A formal definition

As this small 'history' of organizational improvisation clearly shows, formal definitions of this construct are produced by one of two methods: either 'cut and pasting' from jazz theory (e.g. Weick, 1990, 1993a, s.d., 1998a, 1998b; Eisenberg, 1990; Erickson, 1982; Pasmore, 1998; Barrett, 1998; Bastien & Hostager, 1988) or by cutting, at the author's convenience, the construct as it has been defined (again) by researchers in jazz improvisation (e.g. Crossan & Sorrenti, 1997; Moorman & Miner, 1995, 1998a, 1998b; Miner, Moorman & Bassoff, 1996), only to deliver "compressed themes [of improvisation adopted] in the interest of economy" (Weick, 1998; 544).

Nonetheless, if we approach this body of literature free of any strings attached to improvisation in jazz, it is possible to find several common threads in it that allow for the building of a sounder definition of organizational improvisation. In doing this,

we will split this construct into its two components: the words ‘organizational’ and ‘improvisation’.

Improvisation is *organizational* because it is carried out by an organization and /or its members, in a fashion close to that adopted by Miner, Moorman and Bassoff when stating that “actions are organizational if they are taken by one or more individuals on behalf of a team, an organization and / or a project” (1996: 5). Therefore, our usage of term ‘organizational’ departs from prior definitions of this concept that equated ‘organizational’ with ‘collective’, which strike us as an oversimplification (e.g. Moorman & Miner, 1998b).

Drawing on both the definitions put forth by the various authors on this topic (see table 2) and the critiques issued by third stage texts, *improvisation* can be defined as the conception of action as it unfolds, drawing on available material, cognitive, affective and social resources.

Organizational improvisation can thus be defined as *the conception of action as it unfolds, by an organization and / or its members, drawing on available material, cognitive, affective and social resources.*

Insert table 2 about here

Improvisation and bricolage: 1 + 1 = 1

This definition integrates the criticisms put forth by third stage articles and the dominant organizational improvisation literature by explicitly acknowledging the inseparability of the convergence between conception and execution (the first part of the definition) – improvisation, as it is currently defined (e.g. Moorman & Miner, 1998a, 1998b; Crossan & Sorrenti, 1997) – and the ability to build solutions from

available (vis-à-vis *optimal*) resources, i.e. bricolage (last part of the definition) – the point made by later texts on this phenomenon.

In this manner we propose that the separate treatment that the concepts of improvisation and bricolage seem to be having from the literature, is only apparent. If we look beyond the paragraphs where these authors explicitly state their definition of organizational improvisation, and where bricolage is labeled as a construct close but different of improvisation and transferred to the background of research imperatives, we can see that some authors, from which Weick (e.g. 1990, 1993a, 1993b, s.d.) clearly stands out, use these concepts interchangeably, as synonyms. Moreover, even earlier generation authors on organizational improvisation implicitly acknowledge the linking between these concepts. Eisenberg's definition of improvisation as "making do with minimal commonalties and *elaborating simple structures in complex ways*" (1990: 154; our emphasis) together with Weick's "to make something *from whatever materials are currently available*" (s.d.: 21; our emphasis) are only two of the best examples. Improvisation is also present in definitions of organizational bricolage (see table 3). Weick's definition of bricolage as "us[ing] whatever resources and repertoire one has *to perform the task one faces*" (1993a: 352; our emphasis) is a good example.

Insert table 3 about here

The relationship between improvisation and bricolage is made explicit in third stage articles. Hatch (1997), for example, added bricolage to Crossan and Sorrenti's temporal definition of improvisation, by rephrasing it from 'intuition guiding action in a spontaneous way' (Crossan & Sorrenti, 1997: 156) to 'intuition guiding action *upon something* in a spontaneous *but historically contextualized* way (Hatch, 1997:

181; emphasis in the original), and Weick argued that both Crossan and Sorrenti's (1997) and Moorman and Miner's (1998a, 1998b) definitions of improvisation – the two major formal attempts to define this phenomena in organizational settings – are “subthemes in improvisation” (1998: 544) and “compressed themes [adopted] in the interest of economy” (1998: 544). This author goes on presenting a definition quoted from Berliner (1994) that includes both the temporal and the ‘bricolage’ dimensions of improvisation, bringing back the latter to the foreground of research in this area. Drawing on Weick's comments and recognizing the limits of her definition of improvisation, Crossan states that “it may be necessary to further unpack the intuitive dimension to ensure that we do not lose sight of the *discipline, practice and experience on which intuition is based*” (1998: 593; our emphasis), implicitly admitting a lack of concern for the ‘bricolage’ element of improvisation.

From the argument above we can claim that the definition we put forth renders explicit what has been already stated implicitly (‘between the lines’) by most authors – that both bricolage and improvisation belong to the same construct. Apart from resulting from the uncovering of this common theme among writings on organizational improvisation, there are two major reasons for coupling both concepts.

Firstly, improvisation implies the pre-existence of a set of resources, be it a ‘plan of action’, knowledge or a social structure, upon which variations can be built (Weick, 1990; Orlikowski & Hoffman, 1997). Kamoche and Cunha, although being first generation authors because of their heavy reliance on the jazz metaphor, presented, in a recent article (Kamoche & Cunha, 1998), a rationale for the need of a ‘minimal structure’ in new product development processes to allow a tighter alignment to highly competitive environments, arguing that this was a necessary condition for improvisation (and bricolage) to happen.

Secondly, if improvisation means to respond in real time (Crossan & Sorrenti, 1997; Moorman & Miner, 1998a, 1998b), then it immediately follows that improvisers cannot wait for optimal resources to be deployed and have to tackle the issues at hand with those that are currently available (Weick, s.d.). In fact, although Moorman and Miner (1998a, 1998b) are considered the pioneers as far as empirical research in organizational improvisation goes, in truth there are several earlier empirical studies of this phenomenon, even under the explicit label of 'organizational improvisation' that provided evidence for the co-presence of real-time planning and bricolage (e.g. Johnson & Rice, 1984; Orlikowski & Hoffman, 1997). Most of these articles define improvisation in a fashion close to the one adopted here, as temporal convergence of conception and execution together with bricolage (see Table 2). Therefore, when improvisation happens then, necessarily, bricolage will too.

Inevitably, the previous argument raises an issue of reciprocity: is improvisation present whenever bricolage is performed? Formal definitions of bricolage as the one presented by Thayer (1988: 239) that states that it means "making things work by ingeniously using whatever is at hand, being unconcerned about the 'proper' tools and resources" does not seem to imply the simultaneity of conception and execution that partially characterizes improvisation. Nonetheless, research on bricolage as performed by cognitive scientists and anthropologists seems, as it is the case with organizational theory, to be unable to separate bricolage from improvisation (e.g. Berry & Irvine, 1986; Scribner, 1986), thus making the performance of these two skills temporally coincident. Moreover, it makes sense to claim that bricolage only makes sense when having to 'plan in real time'. If time is abundant, it seems only sensible to wait for the 'optimal' resources and optimize their deployment (Pfeffer & Salancik, 1978).

In the end, as implied by our definition, bricolage and improvisation are two lenses that can be used to look upon a single phenomenon whose real descriptive (and, one is tempted to say, explanatory) power rests in being approached as a single construct.

IMPROVISATION IS...

Having addressed the broader issue of the aggregation of bricolage and improvisation (defined in temporal terms) under a single construct (that, for the sake of simplicity, we will label 'organizational improvisation'), we now turn to the explanation of the various elements of the definition proposed above.

...*The conception of action as it unfolds*... Improvisation has been formally defined as the convergence between conception and execution (Moorman & Miner, 1998a, 1998b). Although third stage texts deem this definition as seriously limited (Weick, 1998), planning in action is still an important element of improvisation. Partially defining improvisation as 'the conception of action as it unfolds' allows us to focus on three major characteristics of this construct. First and foremost, it means that improvisation is *deliberate*, meaning that it is the result of intentional efforts on the behalf of the organization and / or any of its members (Miner et al., 1996). Secondly, it means that improvisation is *extemporaneous* – it cannot be planned for (Weick, 1990) and often ensues from an attempt to enhance the deliberateness of the emergent part of organizational strategy and action (Mintzberg & McHugh, 1985; Perry, 1991; Crossan & Sorrenti, 1997), although it can also be purposefully triggered (Weick, 1993a) (one of the 'teachings' from the jazz metaphor that organizational theory has still to implement). Thirdly it means that improvisation *occurs during action* (Miner et al., 1996), meaning that organizational members do not stop to think on what would

be the best response to a problem or the best way to take advantage of an opportunity. Instead they develop their response by acting on the problem or opportunity (Weick, s.d.), and can only judge its correctness by hindsight, not by foresight as in traditional planning.

...drawing on available material, cognitive, affective and social resources.

Here we focus on the 'bricolage' dimension of improvisation, already explored in detail above. This last part of the definition states that the temporal coincidence of planning and executing improvisational action demands that it is performed with available (*vis-à-vis* optimal) resources, meaning that organizational members must have an intimate knowledge of those resources and must be adroit at working with and combining them (Weick, 1993a). In jazz music these resources, apart from the instruments and the affective mood of the group, are mostly enfolded in the score, as the material embodiment of the song. In organizational improvisation a device such as this has still to be found, although a number of authors has hinted at several alternatives (e.g. Weick, 1990; Perry, 1991). This definition aims at contributing towards the development of this construct by putting forth a typology of resources upon which individuals, groups and organizations can improvise upon that underlies, in a more implicit or explicit fashion, most articles on this topic. We can group these resources under four major categories.

Material resources is a general category that encompasses all those resources that lay 'outside' the individual and the organizational social system. Examples of these resources are information systems, financial resources, buildings and other 'tangible' infra-structures.

Cognitive resources is a category that comprises the set of mental models held by the individual members of the organization. These mental models may be explicit

or tacit, and may be acquired both inside and outside the organization. This category is not limited to theories in use but also incorporates espoused theories (Argyris & Schön, 1992) because they too come to bear when members conceive in real time, especially in group situations (Harvey, 1996; Janis, 1971).

Affective resources are an important element of improvisation, yet still a much neglected one in the literature. Eisenberg's (1990) article is one of the best examples of research in this issue, arguing that improvisers' experience, during performance, a feeling of transcendence and emotional interconnectedness, even without prior interaction and self-disclosure. Interestingly enough, recent (and not so recent) group behavior theory also shows that the adequate emotional state can help teams avoid the pitfalls of group deviations (Senge, 1990; Harvey, 1996; Janis, 1971). Hatch (1997) has also referred the importance of 'locking in' a specific emotional state among group improvisers she designates as 'the groove', arguing that this is a necessary condition for improvisation to happen.

Social resources refer to the social structures present among members performing improvisation. These structures include not only formal relationships, but also explicit and tacit rules and informal patterns of interaction. Labeling resources in this category social instead of organizational is a purposeful choice because, as in jazz music, the knowledge and embodiment of these structures may be acquired outside the organization (e.g. skills acquired through professional training). In this case, these structures would then be laid upon each one of the members' experiences in organizational teamwork, in the likeness of what happens in the development of 'swift trust' (Jarvenpaa & Shaw, 1998).

VARIATIONS OF IMPROVISATION

Improvisation is usually presented as a phenomenon that can be observed in varying degrees and forms.

Degrees of improvisation

Most authors argue that improvisation can happen in varying degrees. Some authors state that organizational improvisation occurs along a continuum upper-limited by spur-of-the-moment action and lower-limited by entirely planned action (Moorman & Miner, 1995, 1998b). Other authors, although still relying on the image of a continuum, posit discrete levels of improvisational activity. Weick (1998), for example, draws on jazz performance, to build a four level hierarchy. The first level is called 'interpretation', where plans are strictly followed; and then continues to 'embellishment', where the plan is rephrased but still recognizable; and to 'variation', where unplanned actions are inserted while still holding a clear relationship to the original plan. Finally, when radical departures from plans are to be observed, then we are witnessing "improvisation" (Weick, 1998).

The latter approach, however, is still much rooted in musical improvisation – as it can be easily inferred from the language used, and provides little clues as to how to proceed when measuring the degree of improvisation in organizational contexts. In this light, the coincidence between those espousing the 'continuum approach' to assess this phenomenon, and those doing empirical research on it, does not appear to be attributable to mere chance (e.g. Moorman & Miner, 1998b; Miner et al., 1996). Framing this phenomenon in a continuum is, thus an option more attuned with organizational (and research) practice than the use of a set of discrete categories with unclear boundaries. Furthermore, although we do not contend that every deviation from a planned course of action should be labeled as improvisational, it seems that

treating only radical departures from plans as improvisational is not a wholly tenable position, especially in light of earlier and current research on this phenomenon (e.g. Moorman & Miner, 1998a, 1998b; Orlikowski & Hoffman, 1997; Brown & Eisenhardt, 1997; Johnson & Rice, 1984). In fact, equating improvisation with only radical departures would amount to treat it as a punctuated equilibrium phenomenon (Gersick, 1991) while research on this topic in both organizational and musical / jazz settings (e.g. Brown & Eisenhardt, 1997; Eisenhardt & Tabrizi, 1995; Hatch, forthcoming; Berliner, 1994) shows that the *raison d'être* of improvisation lies in its ability to provoke significant changes by building upon limited variations, in a fashion close to the 'butterfly effect' proposed by chaos and complexity theory (Stacey, 1996).

Types of improvisation

Moorman and Miner's research on improvisation in new product development (Miner et al., 1996; Moorman & Miner, 1998b) uncovered a further set of categories of this phenomenon: collective vs. individual; product vs. process; and behavioral vs. cognitive.

Improvisation is *collective* when it results from the combined effort of several individuals, groups and / or organizations. It is *individual* when it results from the efforts of a single person (Moorman & Miner, 1998b).

Product improvisations affect the substantive nature of products and outcomes of the organization and *process* improvisations relate to the "content, character and sequence of previous routines" (Miner et al., 1996: 10).

Finally, *behavioral* improvisation refers to novel actions taken to affect organizational outcomes and *cognitive* improvisation refers to new interpretations of external stimuli (Smircich & Stubbart, 1985; Miner et al., 1996).

This categorization of organizational improvisation strengthens our argument sustaining its relative underdevelopment in organizational theory. In fact, most of the constructs currently associated with improvisation (see the following section) would be classifiable under these labels. Organizational innovation, for example, can be individual or collective; can focus on a process or a product and can be behavioral or cognitive (Craig & Hart, 1992). Therefore, this classification seems to be of little use for the development of organizational improvisation as an independent construct. The building of a useful typology of this phenomenon seems only to be possible through a wide empirical grounding, and not simply by importing traditional categories from other areas of organizational research.

RELATED CONSTRUCTS

There are several constructs that can be associated with improvisation but that differ from it in important ways. The most commonly addressed in the literature are creativity, adaptation and innovation.

A first and, for the sake of our argument, central difference between these constructs and improvisation lies in the fact that the former are all aimed at pushing variety and at seeking effectiveness, while the latter aims to be a synthesis between those goals and their antithesis – pushing homogeneity and seeking efficiency.

Having performed this first distinction, we will now turn to the relationships between each of these constructs and organizational improvisation.

Creativity, in the organizational arena, refers to “the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system” (Woodman, Sawyer & Griffin, 1993: 293). Departing from this definition, we can see that this construct shares with improvisation a focus on novelty, but differs from it in the sense that it can result from a plan and that it can be delayed in order to be performed with optimal (*vis-à-vis* available) resources (Amabile, 1998). Creativity may be observed during improvisation, when actions are *absolutely* novel (meaning that they didn’t exist before). However improvisational performance may only be *relatively* novel, meaning that it had been done before but that it was never (1) used by those undertaking the improvisation and / or (2) in the situation that triggered the improvisation (Moorman & Miner, 1998a).

Adaptation refers to the adjustment to external conditions (Campbell, 1989). This construct shares with improvisation its focus on changing course of action but, as with creativity, the conception of an adaptation can occur before its implementation (e.g. Hamel & Prahalad, 1994; Hammer & Champy, 1993). Moreover, adaptation can be timed in order to have all the necessary resources in place when it is implemented as the organizational metaphors from military war clearly show (Von Clausewitz, 1976). Nonetheless, in highly turbulent environments and / or in highly complex scenarios, adaptation may be limited to be improvisational at the expense of being too late to respond effectively to an external threat (Perry, 1991; Crossan, White, Lane & Klus, 1996).

Innovation can be defined as “the adoption of any device, system, process, problem, program, product or service that is new to the organization” (Dougherty, 1996: 424). This construct shares with improvisation its focus on relative (to the

organization and / or the situation at hand) novelty but, as with the previous concepts, innovation may be planned and scheduled so that all the necessary resources are in place. In fact, Cooper (1979) provided broad empirical evidence to show that when this is so, innovations tend to perform better on the market. In spite of this, improvisation has been posited as an alternative model of organizational innovation whose growing importance is again due to the quantum changes on competitive landscapes (Bettis & Hitt, 1995). However, this model is still in the margins of mainstream new product development research, with few notable exceptions (e.g. Brown & Eisenhardt, 1998).

Learning happens when “forgetting, concealing and silencing hide a new set of continuities and in their place create new categories, different meaning and more organization” (Weick & Westley, 1996: 456). Although often being a result of improvisation (Moorman & Miner, 1995, 1998a), improvisation can occur without learning (e.g. Weick, s.d.) and vice versa (Crossan & Sorrenti, 1997). In addition, learning can also result from carefully planned experiments, like those following the scientific method (Gower, 1997). Notwithstanding, in highly competitive environments, the rate of learning - which can be increased through the ability to improvise - can be a strong competitive advantage (Crossan & Sorrenti, 1997).

MEASURING IMPROVISATION

Having discussed organizational improvisation, its related constructs and main variations, we now turn to the issue of its measurement.

Our literature review uncovered two studies of improvisation where this construct was formally measured. The most salient one, widely considered the first research of this type conducted on organizational improvisation, is Moorman and

Miner's work on the role of memory in new product development (Moorman & Miner, 1998b). These authors draw on their definition of improvisation as "composition converg[ing] with execution" (1998a: 702) to argue that improvisation would best be measured by "the length of time between the design and execution of an action" (1998a: 716). In fact, when measuring improvisation in an actual research setting, the authors rely on the following measure (Moorman & Miner, 1998b: 17):

Seven point semantic differential scale

Rate the action:

- Figured out action as we went along / Action followed a strict plan as it was taken
- Improvised in carrying out this action / Strictly followed our plan in carrying out this action
- Add-libbed action / Not an add-libbed action

Although having some limitations, namely an overreliance on the subject's perception of improvisation (this is what is *de facto* measured on the two last items) and the restriction of improvisation to its temporal dimension, this approach seems to provide a standardized measure of temporal convergence between planning and execution (Moorman & Miner, 1998b) amounting to an "objective" although partial measure of organizational improvisation.

The second study on this phenomenon is Johnson and Rice's work on 'open technology' implementation processes in organizations (Johnson & Rice, 1984), much in the line of Orlikowski's work on technology-facilitated change (Orlikowski, 1996; Orlikowski & Hoffman, 1997). These authors set out to study a phenomenon they call 'reinvention'; nonetheless, if we compare their definition with most definitions of

improvisation (see table 2), we find that these are just two different labels for the same construct.

Johnson and Rice measured 'reinvention' as "the number of innovation components over and 'above' a standard configuration" (1984: 170). This means that they literally count the variations around what was planned or, to use a jazz metaphor the number of notes played by the musicians that were not a part of the original score of the song. The use of this measurement of improvisation deserves two considerations. First, it takes the convergence of planning deviations and the implementation of those deviations as given – something that does not amount to a serious flaw because the authors explicitly state that the deviations counted are those performed "in the process of adoption and implementation", meaning those whose conception was very close (or even coincident) to their execution. Secondly, by concentrating on the *content difference* between the planned and the actual performance (instead of the *temporal difference* between both), Johnson and Rice address the issue of how to measure bricolage, that we see as an integral part of the improvisation construct. In fact, what the authors are measuring is the organizational / group / individual ability to make the most out of the available structure. In this sense, we argue that being able to make more out of the resources available means performing a higher degree of bricolage and, consequently, of improvisation.

Drawing on both measures but departing from their use in isolation from each other, we argue that bricolage, being part of the improvisation construct, should be taken into account when conceiving a way to evaluate the occurrence and incidence of this phenomenon. Therefore, and based on the definition presented above, we propose a measure that takes into account *both* the gap between the conception and execution of the variations around a course of action defined *a priori* in an explicit or implicit

manner. This way, before looking for instances of improvisation, the researcher should then be equipped with cognitive maps of what the subjects believe is the 'standard' course of action (e.g. Voyer & Faulkner, 1989). Using an image from jazz, what we are arguing is that the measuring of improvisation in a specific performance possesses a higher degree of reliability if the researcher takes with him or her not only a stopwatch, but also a copy of the written score of the 'standard' of the song played in that performance.

WHEN DOES IMPROVISATION HAPPEN?

An organization improvises when it faces an occurrence it perceives as unexpected for which it does not possess any kind of preplanned course of action and which is perceived as requiring fast action (Weick, 1990, 1993a, s.d.; Crossan & Sorrenti, 1997; Hatch, 1997; Moorman and Miner, 1995, 1998a, 1998b). Thus improvisation arises when *both* (1) a demand for (a) speed and (b) action and (2) an unexpected (and unplanned for) occurrence are perceived by the organization. This raises three major issues: (1) the origin of the demand for action; (2) the origin of the unexpected occurrence; and (3) the origin of the demand for speed.

As we argued when defining organizational improvisation, its practice entails action. This means that, for improvisation to occur, the unexpected event perceived by the organization must be: (1) perceived as important and (2) perceived as within the action span of the organization. It is commonsensical to state that, if an unexpected event is not perceived as important to the organization, then it is unlikely that it will feel motivated to take any action relative to that occurrence. A book publisher would do little to take action in the face of a new entrant in the automobile market, a car manufacturer, facing the same situation, would probably deploy significant resources

to do so. In the same vein, an organization will only act upon those events that it perceives as possible objects of its action. Thus, even in the face of an important event, the organization will only improvise if it believes that there is something it can do about it.

The occurrence of an important and ‘actionable’ phenomenon is not a sufficient condition for improvisation to be triggered, the organization has to perceive this phenomenon as unexpected *and* ‘unplanned for’ (Miner et al., 1996). A lag in demand is both important and ‘actionable’ but it can be planned for months in advance, such as in the case of seasonal demand cycles. However, the fact that an occurrence is unexpected does not immediately trigger improvisational action, it must cumulatively ‘unplanned for’ (Ciborra, 1996). This means that the organization / group / individual does not have a predefined script / course of action to handle the event. A loss of cabin pressure, although not being a planned event on a plane trip, is dealt with through highly standardized procedures, designed long before its occurrence.

Unexpected and ‘unplanned for’ occurrences can happen externally – in the environment – or internally – in the organization. Independently of their *locus*, the triggers behind these occurrences vary according to the perspective we espouse about reality. We can either believe that (1) reality is objective and exists independently of the subject or that (2) reality is subjective, socially constructed and contingent to the subject (Weick, 1993a; Smircich & Stubbart, 1985). Each one of these perspectives encompasses several triggers for improvisation, as shown by Table 4.

Insert table 4 about here

When considering the organization and its environment as objective realities, the need for improvisation arises from an unexpected mismatch between planned for / expected and actual *perceived* environmental or organizational conditions. This mismatch can be either imposed to the organization or created by it.

When it is imposed it can be traced to one of two sources. Firstly, complexity and the law of small effects (Stacey, 1996) can create unanticipated, emergent environmental states, impossible to predict beforehand. Secondly, fortuity or luck can also be responsible for threats or opportunities that, by definition, are impossible to anticipate and that can have a strong impact on the organization (Crossan et al., 1996; Moorman & Miner, 1995, 1998b; Perry, 1991).

When this mismatch is created by the organization, it can be originated either from the creation of a new vision or from a flaw in its mental models.

On the one hand, an organization may be unsatisfied with its present state and create a new vision for itself. By doing this, the organization is articulating a *future* state of reality it wants to achieve, inducing action in its members by making explicit the distance between current reality and vision (Fritz 1989, Senge 1990). This action is partially planned (especially in business organizations) but the emergent part of these changes has been found to be considerable (Mintzberg & McHugh, 1985), and answerable by means of improvisation (Perry, 1991; Crossan et al. 1996)

On the other hand, the organizational members' mental model of themselves and of their relationship with the environment can be flawed (Senge, 1990). This can happen because influential actors, factors or relationships are ignored (or relatively irrelevant ones are taken into account), because influential factors or relationships are misconceived and / or because the organization perceives its environment as a series

of linear / cause-and-effect relationships when it actually behaves according to systemic / circular ones.

When considering reality to be subjective and socially constructed, improvisation is triggered not by an unexpected mismatch between expectations and *perceived* environmental conditions, but between expectations and *enacted* environmental conditions, which are by definition (Smircich & Stubbart, 1985) a responsibility of the organization and its members. In this context, the need for improvisation may arise from the enactment of a new environment by the organization (Weick, 1993a; Perry, 1991; Crossan & Sorrenti, 1997). When the organization enacts a new environment, there is still a mismatch but it is now reversed. The speed and complexity of changes in the organization is higher than those of environmental changes (Weick, 1993a) – organizational members are assuming an environment that differs from the one they're currently facing. This mismatch is attenuated and hopefully eliminated by action (and, concurrently, improvisation) performed *within* the organization aiming not at transforming itself but the environment. The task the organization faces is then to alter its actual environment to fit its assumed environment (Weick, 1993a).

An unexpected and 'unplanned for' event perceived as important is still not enough to amount to a sufficient condition for improvisation to occur, for two main reasons. Firstly, research on the discrepancy between organizational memory and the perception of newness of an occurrence (Moorman & Miner, 1998a, 1998b; Miner et al., 1996) shows that, it is not only when this discrepancy is very low that improvisation is hindered – this also happens when this discrepancy is very high. The rationale behind this latter phenomenon is mostly grounded in the triggering of defensive routines (Moorman & Miner, 1995). When input from the environment is

highly dissonant with individual or organizational expectation, this input tends to be ignored (Argyris & Schon, 1992). The well documented examples of long established market leaders finding their competitive positions brought to close to insignificant levels, like IBM's stubborn ignorance of the emerging PC market (Hamel & Prahalad, 1994) are good examples of this phenomenon. Secondly, the organization has to perceive a need for speedy action. The appearance of a new competitor can be dealt with by devising a careful plan of action, which is by no means an improvisational action, although its trigger is an important, 'actionable', unexpected and 'unplanned for' occurrence. The missing ingredient is speed (Weick, 1990; Crossan & Sorrenti, 1997). If immediate action is required, then the organization has no choice but to plan as events unfold and to 'make do' with whatever people and resources it has available at that moment – in short, to improvise (Weick, 1993b; Crossan, 1998; Moorman & Miner, 1998a).

This demand for speed can have either an internal or an external origin. No-exceptions milestones, either explicitly articulated or implicitly enforced through leadership are the internal pushes *par excellence* of speedy action in most business organizations (Brown & Eisenhardt, 1997; Eisenhardt & Tabrizi, 1995).

External pulls for speed of action are normally resident in the environment. The fastest a competitive environment is – meaning the shortest the time taken by competitors to respond to each other's actions and to environmental variations –, the fastest the organization must respond to changes – those that lag behind do so at the price of reduced competitiveness (D'Aveni, 1995). This means that the higher the speed of the environment framing the organization the higher the likelihood of it undertaking improvisational activities. This line of reasoning has led several authors to restrict the occurrence of improvisation to turbulent environments. Nonetheless, if

we draw on the work of Emery and Trist (1965), we can easily see that this is a somewhat narrow view that can unnecessarily restrict the pool of researchable industries for this phenomenon and, in the same vein, those that can benefit from the lessons learned from this research. In fact, although *turbulent field* environments are fertile soils for improvisation, because of its high level of complexity, those environments that Emery and Trist (1965) label as *disturbed-reactive*, with their emphasis on speed as competitive weapon, are also likely stages for this activity. In fact, the only difference between these two categories of environments resides on the fact that in the latter complexity is only originated by its players, while in the former it can be triggered by the environment itself. Notwithstanding, both environments are subject to considerable levels of fortuity and complexity and are thus probable scenarios for organizations to improvise (Weick, 1993a).

Finally, it is important to note that a perception of a mismatch between expected and actual reality can be either perceived as a *problem* or as an *opportunity*, thus leading to qualitative different triggers for improvisation. In the first case, when improvising, the organization is responding to a change in its environment or in itself, that is perceived as a threat and that, if no action is taken, can have serious negative effects. The goal is to neutralize the problem in order to get back to 'business as usual' – the organization resorts to negative feedback to maintain its preferred state (Miner et al., 1996). In the second case, when improvising, the organization is taking advantage of an internal or external change, which is perceived as an opportunity, and that, if action is taken, can have positive effects. The goal is to benefit from this change in order to improve the organization's position – the organization resorts to positive feedback to move to a better state (Perry, 1991). Improvisation can be framed under both of these labels but, in the end, as we said before, it happens whenever an

organization it faces an occurrence it perceives as unexpected for which it does not possess any kind of preplanned course of action and which is perceived as requiring fast action, either this occurrence is perceived as a problem or an opportunity.

HOW DOES IMPROVISATION HAPPEN

An unexpected and 'unplanned for' event demanding fast action is not enough to guarantee that organizational improvisation will occur. There are several conditions an organization must meet to be able to improvise and there is a number of factors that will affect its effectiveness.

The conditions for improvisation to occur can be grouped under the following headers: (1) an experimental culture; (2) a minimal structure; and (3) a low procedural memory (see table 5).

Insert table 5 about here

An *experimental culture* results from a set of values and beliefs that promote action and experimentation – as opposed to reflection and planning – as a way of understanding and dealing with reality. The point is (to paraphrase Peters [1992]) to replace a 'ready, ..., ready, aim, aim, ..., aim, fire' approach by a 'fire, ..., fire, aim, fire' one. For this to happen, the organization has to, at least, tolerate errors and, ideally, be able to espouse what Weick (1990) calls an 'aesthetic of imperfection'. Those that do, recognize that in turbulent environments it is difficult to survive, let alone prevail, without seriously pursuing innovation. These companies accept the 90%+ failure rates for which innovation is well known in the business arena (Craig & Hart, 1992) as the price to pay for the 10% that do succeed and for the learning that

ensues (Crossan & Sorrenti, 1997). Cultures, in this kind of organizations have strong 'pro-innovation' biases and believe that a great plan can only be accomplished from finding an emerging pattern in actions taken in the past, through sensemaking (Weick, 1995). To foster, such a culture these companies can use two major mechanisms. Firstly, they reward people based on the number of 'competent mistakes' they have made (being a competent mistake one that results from novel ideas and not from flawed execution) (Picken & Dess, 1997). Secondly, they can tap the power of symbolic action and stories as third order controls (Perrow, 1986; Weick, 1990), by diffusing tales of 'competent mistakes' as role models for the organization's members.

Another value that an organization must espouse for improvisation to occur is that of urgency. As we argued when discussing the external triggers of improvisation, the occurrence of an unexpected and 'unplanned-for' event is not enough for improvisation to happen. Those that are to tackle this event should feel that it can only be addressed through fast action (Perry, 1991). Otherwise they can fall back on planning (because they perceive that they have time to do so) instead of being pushed to compose a course of action in real-time – a process of a far more daunting nature than the former (Eisenberg, 1990).

A *minimal structure* refers to the sets of controls employed to accomplish the efficient effectiveness for which improvisation has been touted (Weick, 1998; Crossan, 1998; Orlikowski, 1996; Brown & Eisenhardt, 1997). Most authors on improvisation argue that the only kind of integration mechanisms applicable in an organization that aims to improvise are third order controls, meaning indirect controls that coordinate via culture or ideology (Perrow, 1986; Mintzberg, 1995; Weick, 1993a). This argument can be justified by drawing on the work of Dougherty who has

shown the difficulties of pursuing novel actions in organizations stifled by first (direct supervision) and second (standardization) order coordination mechanisms (Dougherty, 1996). However, drawing on recent findings in critical studies of organizational control, we contend that improvisation can happen in environments where first and second order mechanisms are abundant. The touchstone of controlling improvisers lies, we argue, not in the degree of obtrusiveness of those mechanisms but in their invisibility. In what concerns first order controls, direct supervision can be 'delegated' from superior to peers allowing for the maintenance of this type of coordination without hampering creativity (Sewell, 1998). In jazz improvisation itself, band members are often chosen because of their reputation not among critics but fellow players (Hatch, forthcoming). Second order controls can be rendered invisible by incorporating them in the production technology itself (be it of tangible goods or services) (Joerges & Czarniawska, 1998; Barley & Kunda, 1992).

Apart from control mechanisms, a minimal structure needs two further elements to build upon / realize the potential of the feeling of urgency discussed before and to maintain a minimum level of coherence among improvisational action in order to, again, ensure that its promise of efficient effectiveness does not go unfulfilled (Brown & Eisenhardt, 1997).

Milestones or action deadlines have been found to be an effective mechanism to hold the momentum / sense of urgency first triggered by an unexpected and 'unplanned-for' event (Gardner & Roggoff, 1990). Furthermore, milestones are opportunities to perform a check between current actions and the development of the situation the organization is facing, allowing to detect any deviations / misperceptions that need to be corrected (Brown & Eisenhardt, 1997). Moreover, milestones are currently set in advance and planned, thus providing a sense of structure /

routinization to improvisational activities often perceived to result from chaos and disorder (Eisenhardt & Tabrizi, 1995). Finally, milestones serve as moments of feedback as partial stages / steps are concluded and thus, potentially increase individual motivation – building the momentum and the sense of urgency needed for improvisation to be sustained.

Clearly articulated goals serve the all-important function of ensuring that improvisational activity amounts to the attainment of organizational objectives. Clearly articulated goals perform, in organizational settings, a very similar function to that of the song in jazz improvisation. They are akin to a magnetic field (or a strange attractor, to use complexity theory) that, although not prescribing individual action, are strongly normative in what concerns the results of such action (Weick, 1993a). They also contribute to coordination among individual members by defining the results of their activity in a similar process to that of standardization of outputs (Mintzberg, 1995).

A low procedural memory / small number of routines is also a central condition for improvisation. Procedural memory refers to the set of routines one possesses to address the tasks / challenges one faces (Gersick & Hackman, 1990). In this light, improvisation appears to only occur when an organization / individual does not have an adequate routine / procedural memory to respond to an unexpected situation (Moorman & Miner, 1995). In situations for which an adequate routine does exist, then improvisation will be highly unlikely. This rationale is grounded on the following: firstly it would be inefficient to invest in finding an improvisational course of action when another such as effective is already stored in memory; secondly, these response processes are often unconscious, automatic and often act undetected, lowering the deliberateness of their choice. However, in spite of empirical proof that

organizational memory does hinder improvisation (Moorman & Miner, 1998b), it is at least theoretically arguable that the opposite is also true. In fact, if we understand routines as grammars (Pentland & Rueter, 1994), and knowing that elements in grammars can be combined in endless possibilities, then procedural memory would be the organizational counterpart of the score of a song, that organizational improvisers could embellish / modify at will during action (Moorman & Miner, 1998a; Weick, 1998). Moreover, there is also empirical evidence that this is so, in a study on improvisation in the computer industry, Brown and Eisenhardt (1995) found that firms with established routines are *more likely* to improvise than others that do not.

Our contribution to the untangling of this paradox lies in affirming that although organizational memory hinders, in fact, improvisation this can be severely attenuated if the organization can build the necessary will to depart from current grammatical forms and use their elements to create new routines *as action is unfolding* (as we will discuss below).

The factors influencing the quality of improvisation fall under the following categories (see tables 6A and 6B): (1) leadership; (2) member characteristics; (3) information flow; (4) memory-related factors; (5) organizational configuration; and (6) resources.

These factors differ from those presented above in that they do not determine if organizational improvisation will happen or not, instead they affect its extent and quality, when it does.

Insert table 6A about here

Insert table 6B about here

Leadership is an important factor affecting the degree and effectiveness of organizational improvisation. Authors drawing on the jazz metaphor argue that a 'servant' leadership style (Greenleaf, 1977) and a rotating leadership favor wider departures from canonical practice (Bastien & Hostager, 1988; Weick, 1993b). The rationale for the relevance of a rotating leadership is grounded in contingency leadership theory which states that, in unexpected and 'unplanned for' situations, a strong leader must emerge especially when action must be hasten (Fiedler, 1965). Although this seems to contradict the need for a rotating leadership, we contend that instead it renders it more pressing. This is due to the growing complexity and interdisciplinary nature of the problems / opportunities organizations face, which calls for different competencies and knowledge (Stacey, 1995). Thus, when each member is called to give its contribution to the ongoing improvisation he cannot only act as a 'consultant' or 'counselor' but, instead, as a leader because of the coupling of a scarcity of time and an abundance of complexity / need for specialized knowledge (Weick, 1993a, s.d.; Stacey 1965). The leadership style of the group's / organization's formal leader is also an important moderator of improvisation. Paralleling our previous discussion of the 'minimal structure' concept, a directive leader would act as a visible and obtrusive control mechanism that would hamper improvisation. Nonetheless, if the elements of the minimal structure above are in place, a directive leader would restrain the span of the risks its followers take, but this would not put in question the occurrence of improvisation (Eisenhardt & Tabrizi, 1995; Weick, 1993b). A 'servant' leader, however, can be have a meaningful positive impact on the

quality of organizational improvisation. This kind of leaders holds a twofold stewardship: stewardship for their followers and stewardship for the purposes of the organization (Greenleaf, 1979). Stewardship for followers has two advantages, first it attenuates the negative effects of practicing improvisation (discussed in the next section) (Eisenberg, 1990) and, secondly, it allows for more fluid transitions of 'real' (as opposed to 'nominal') leadership within those improvising. Stewardship for organizational objectives builds upon the 'clear goals' element of the minimal structure presented above, strengthening their ability to focus improvisational actions (Bastien & Hostager, 1988; Weick, 1993a).

Member's characteristics can also have a significant effect over improvisation in organizations. First and foremost, most authors drawing on the jazz metaphor to study organizational improvisation, argue that the level of performative skill that each individual possesses determines his ability to pursue improvisational activity that is very distant from organizational routine (e.g. Weick, 1990, 1993a; Crossan et al., 1996). Moreover, these authors further argue that, when improvisation is a group phenomenon, this group's improvisational performance will be limited by the ability of its least skilled member (Bastien & Hostager, 1988; Hatch, forthcoming). The relevance given to skill rests on it being a vehicle for creativity to be put in practice. Thus, individual creativity is also an important trait that an improviser must possess (Erickson, 1982; Crossan, 1998). Only high levels of individual creativity will allow for radical departures from current organizational practice which, according to Weick, reflect "purer instances of improvisation" (1998: 545), with lower level of it resulting in 'variations' or 'embellishments' that still retain much of the original routine / idea and that may not be as effective. This impact of individual creativity is, of course, only possible when what we called 'the

conditions for improvisation' (see above) are present (Crossan & Sorrenti, 1997). Otherwise, individual creativity will be occulted (Amabile, 1998) or worst – it will feed dangerous organizational phenomena such as groupthink (Janis, 1971). Another organizational attribute that can do much for the degree of improvisation and its effectiveness is member diversity. Homogeneous organizations are not prone to diverse approaches to solve problems or to reap opportunities, the same goes for individuals (Hannan and Freeman, 1989). Thus, the 'novel' element of organization improvisation will be seriously compromised if the organization does not benefit from a diverse population and it will probably be limited to mere embellishments or small variations upon existing ideas, products, practices and routines (Weick, 1990, 1998; Hatch, 1997). A final characteristic of individual organizational members relevant to their improvisational accomplishments is their ability to deal with the affective element of their performance and the extent to which they believe that treating emotion explicitly is valid in organizational settings. Managing one's own affective state is an important element of improvisation because of the anxiety its performance entails. The perception of an absence of structure will most often than not provoke a considerable level of anxiety among those performing it (Barrett, 1998; Hatch, forthcoming). If this anxiety is not dealt with, which seldom can be accomplished without rendering it explicit (Kets de Vries & Miller, 1984), then it can reduce the distance between canonical and improvisational practice (Eisenberg, 1990; Amabile, 1998). It can thus be a threat to the effectiveness of improvisation and, in the end, the organization's will – let alone ability – to perform it. Being able to explicitly recognize and discuss their affective state by those who are probable subjects of improvisation can do much for their ability to engage in it, and the results they will obtain from it.

Factors related to the *information flow* are also relevant to determine the degree and quality of improvisational activity within an organization. This set of factors can be divided in (a) factors related to the information flow between the organization and its environment and (b) factors related to the intra-organizational information flows.

Information flows between the organization and its environment determine the appearance or not of improvisation, and were already discussed when we presented the factors triggering organizational improvisation.

Information flows inside the organization can have an important impact on improvisation in organizational settings because of the centrality of fluid communication among those performing it to avoid its falling into random undirected action (Orlikowski, 1996), due to the absence of direct coordination mechanisms. Fluid communication serves, thus, as an integrating device when individual's performances are coordinated through action alone (Bastien & Hostager, 1988). If this fluidity is compromised, then the perception of an unexpected and unplanned for occurrence may elicit incoherent and – ultimately – ineffective responses from the organization (Moorman & Miner, 1998a) because not all of its members will perceive it as such (especially those in roles further away from the market) and because they will know little of others' efforts to address that challenge.

Considering that improvisation both departs from current routines / knowledge and builds on those routines / knowledge, it follows that organizational *memory related factors* potentially affect the way improvisation occurs and the quality and magnitude of its effects. Organizational memory can be decomposed into procedural memory – knowledge of action – and declarative memory – knowledge of facts (Anderson, 1983). As we argued before, procedural memory relates to the occurrence

(or not) of improvisation. Declarative memory is more related to qualitative variations of this phenomenon. Declarative memory plays an important role in the degree of improvisation: the more facts an organization knows the broader and, arguably, diversified its based for creativity and thus for improvisation (Amabile, 1998; Woodman et al., 1993; Moorman & Miner, 1998b). Nonetheless, it must also be stated that a wide span of declarative memory may slow the speed of improvisation because of the size of the amount of time that individuals must invest to search through all available alternatives (Moorman & Miner, 1998a), although one could argue that bounded rationality would act to counter this phenomenon (Simon, 1990). Another issue related to organizational memory that has a potential impact on improvisation relates to procedural memory on its performance. Practicing improvisation in a simulated and 'safe' environment, that is to say, in an environment purposely set up for this aim can help individuals build the skills for effective improvisational activity in 'real' situations by building a procedural memory base for this competence (Crossan, 1997) and thus allow them to avoid those mistakes that are characteristic of first-time performances. Finally, another competence related to organizational memory resides in the will to depart from that memory. If individuals cling to the organization's procedural memory, as sparse as it might be, then no matter how rich their knowledge base nor how significant is their creative potential, they will tend to fall back on pre-existing routines (Weick, 1990; Crossan et al., 1996). Therefore, organizational members must be able, and willing, to unlearn their canonical responses in the face of unexpected and 'unplanned for' events if there are to tackle them through improvisation (Weick, s.d.).

Organizational configuration builds upon the minimal structure to enhance the process and outcomes of organizational improvisation. A first and relevant element of

an organizational configuration that fosters improvisation is the existence of close and trusting relationships among its members (Crossan et al., 1996; Weick, s.d., 1993b). The presence of such relationships build a 'safety net' for risk taking (Weick, 1990) augmenting the degree to which improvisational practice departs from canonical routines. A quick inspection into the literature on organizational improvisation appears to show that this is not a shared perspective among authors (e.g. Bastien & Hostager, 1988; Hatch, forthcoming). However, if we look closely we can find that even those that explicitly state that close relationships may *hinder* improvisational activity are not delving deeply enough into their own empirical observations. Bastien and Hostager's (1988) experiment with four musicians that had never played together before is an example of this. As the authors show, this group started with highly structured songs, allowing for little improvisation, and slowly progressed to more complex ones, where improvisation happened with a much higher frequency. Bastien and Hostager called this a centering strategy (1988) that can be described as replacing lowering social uncertainty with growing task uncertainty. Restating their findings, we can say that the musicians only truly improvised (Weick, 1998) when they had been able to build a trusting and close relationship among them, as far as the situation they were facing allowed it.

Another still significant element of an organizational configuration that fosters improvisation is a collateral structure. Collateral structures organizational spaces, that may come to being either through a deliberate choice of the formal organization or an emergent phenomenon of the informal one, where members are 'relieved' from the impositions of formal / prescribed practices and are able to pursue less canonical ones (Brown & Duguid, 1991). These structures have, thus, three main functions: (a) they allow members to build the requisite variety of ideas necessary for

improvisation to occur; (b) they serve as an arena where individuals can practice improvisation in a safer environment before performing it in interaction with the market; and (c) they offer a space for improvisation to be performed when the main organization does not possess the conditions we presented before as necessary for this phenomenon to take place (Weick, 1993a; Peters, 1992). Group size is the final element of the organization's configuration with a potential impact in its ability to improvise. Exceedingly large groups can reduce the difference between routine behavior and improvised one (Powers, 1981). This happens mainly because a large group of people cannot coordinate itself based on mutual adjustment alone (Mintzberg, 1991), and then the newly imposed controls would hinder its ability to improvise (Sharron, 1983). Moreover, the larger the group the higher the probability of information distortion and the lower the real-time information communication speed, thus the lower the incidence of improvisation (Moorman & Miner, 1995)

A final element influencing improvisation are the resources the individual / team / organization possesses to perform it. Specialized and limited purpose resources can thwart improvisation by limiting organizational members' ability to turn their ideas into practice. Conversely, multi purpose resources are flexible enough to be deployed into a variety of uses, even if those uses were never part of the organization's original intentions (or even imagination) for their applicability (Weick, 1993a). Thus, resources may affect improvisation through its bricolage dimension by augmenting the possible courses of action an organization can take, because of those resources' flexibility. General-purpose resources reduce the number of constraints upon those that are conceiving action as it unfolds, thus augmenting their potential degree of departure from standard practice / ideas and, ultimately, their ability to reach 'purer' forms of improvisation.

WHY DOES IMPROVISATION HAPPEN

Organizational improvisation can have both positive and negative outcomes.

Positive outcomes can be grouped under the following categories (see table 7):

(1) flexibility; (2) learning; (3) motivation and (4) affective outcomes.

Negative outcomes are (see table 8): (1) biased learning; (2) opportunity traps; (3) amplification of emergent actions; (4) overreliance on / addictiveness to improvisation; and (5) increased anxiety.

Insert table 7 about here

The most attractive and touted outcome of organizational improvisation is, essentially, flexibility (see table 7). Flexibility is a concept close to that of 'adaptation', in the sense that it aims at maintaining a certain degree of fit with the environment by changing the organization to respond to changes in it, but that differs from adaptation because of the velocity that improvisation allows the organization to have when accommodating those changes. Flexibility, then, puts together adaptation to changes in the environment with high speed, thus maintaining the convergence between the fast and the unexpected, characteristic of its triggers.

Learning is a second outcome of improvisation. Organizations that improvise may learn in three ways. First, they can learn how to improvise. Secondly, they can learn through the formalization / routinization of its improvisations. Finally, they can learn more about themselves and their environment through the 'action' component of improvisation.

Several authors, especially those drawing from the arts to study improvisation in organizational settings argue that practicing, i.e. performing improvisation routinely enhances an organization's ability to improvise (e.g. Crossan et al., 1996). The rationale behind this argument is that improvisation is a skill on its own (Weick, 1990) that cannot be transmitted explicitly, through formal knowledge, but that can only be grown through its performance. These authors normally draw on examples from jazz (Weick, 1998) and theater (Crossan et al., 1996) to show that only through much practice do people acquire considerable adroitness at the skill of improvising. Moreover, other authors (e.g. Eisenberg, 1990; Bastien & Hostager, 1988; Leinhart & Greeno, 1986) have shown that, when improvising, groups start with few and simple variations pursuing progressively a path of increasing task uncertainty, and thus with increasing opportunities (and demands) to improvise. This suggests that, *through action* – the performance of improvisation – organizational members are able to hone this skill thus improving their ability to face tasks that require high proficiency in its use, following what Bastien and Hostager have labeled a 'centering strategy'.

The novel ideas that come out when an organization improvises do not necessarily fade away when this improvisation ends. Miner, Moorman and Bassoff (1996) have shown that improvisations in both processes and products are retained and sometimes routinized by the organization in order to enhance future performance. In this sense an improvisation may be rolled out into an organizational innovation if the organization continues its use after the event that triggered it is no longer present and ends up endorsing it as standard practice, either in an implicit or explicit fashion.

Finally, improvisation, by stressing action as a way to learn about the situation it is currently facing (Weick, 1990), and its environment in general allows the organization to fine-tune, and sometimes to alter dramatically the mental models it

holds about itself and its surroundings (Weick & Westley, 1996). Moreover, improvisation, with its emphasis on experimentation, opens a whole new learning arena to organizations by showing that mistakes and failures are learning opportunities as legitimate (if not even more so) than environmental scanning and other information generation techniques (Sitkin, 1992).

These two consequences, flexibility and learning, when occurring through long periods of time may amount to a seldom discussed outcome of organizational improvisation: changing dramatically the nature of the organization's business portfolio and, sometimes, the organization itself. This statement is grounded in the argument that most organizations do not change in strong and infrequent bursts – as the punctuated equilibrium model contends (Gersick, 1991) – but through small and incremental changes that in the long run can have much more significant and discontinuous results than under the former model (Brown & Eisenhardt, 1997; Eisenhardt & Tabrizi, 1995; DeGeus & Senge, 1997). Van de Ven and Poole (1995) have in fact argued that the punctuated equilibrium model is but a particular case of the incremental change model. Therefore, improvisational activities, as modest as they may seem when they occur, can have a *de facto* transformational effect over the organization.

Improvisation in organizations also results in increasing motivation (1) to work and (2) to improvise.

Higher motivation to work (or motivation *strictu sensu*) results, according to Hackman and Oldham's model, from the levels of task variety, task significance, task autonomy, feedback and task identity (Hackman & Oldham, 1980). Improvisation, with its emphasis on milestones and its iterative nature (Brown & Eisenhardt, 1997; Eisenhardt & Tabrizi, 1995) provides high levels of individual feedback, thus

contributing to potential increases in individual motivation. Additionally, when improvisational action has performative outcomes that the organization values as positive, improvisation is likely to earn a higher legitimacy as a standard practice, providing that the organizational culture does not over-rationalize this phenomenon as a pre-planned occurrence (Orlikowski, 1996; Miner et al., 1996). In this way, the organization as a whole may acquire a higher motivation to improvise when facing unexpected events (Eisenberg, 1990).

Organizational improvisation may also have affective outcomes. Improvisation, especially when leading to high performance outcomes, may build a feeling of transcendence among its participants (Eisenberg, 1990). This feeling of transcendence is the result of being able to tackle a problem or take advantage of an opportunity that is perceived both as important to the organization and difficult to handle by the means of what is often perceived as sheer ingenuity (Barrett, 1998) instead of reliance on plans and routines. Moreover, if this experience is not individual but shared it can foster the building of strong bonds among participants in this process (Powers, 1981) without the need for personal disclosure or prior personal relationships (Bastien & Hostager, 1988), pushing affectivity from the individual to the group and sometimes even to the organizational level.

Insert table 8 about here

Unfortunately, improvisation does not only entail positive results (see table 8). Learning resulting from its occurrence in an organizational setting can be biased (Moorman & Miner, 1995). Organizations can, in fact, when formalizing knowledge acquired while improvising can make a 'leap of abstraction' (Senge, 1990) and

generalize a solution that makes no sense in circumstances other than those where it was first conceived (Moorman & Miner, 1998b). Moreover, even if that solution can be generalized, there are no guarantees that it is the most efficient one, and although this can be tackled through post-action reflection, this does not necessarily place. In this vein, Lessons learned from improvisation have the danger of becoming *de facto* organizational ‘panda thumbs’ (Gould, 1980) or, in other words, legitimate but inefficient solutions to a given category of problems.

Another potential negative outcome of organizational improvisation is a phenomenon called the ‘opportunity trap’. An organization falls in an opportunity trap whenever it fails to exploit the novel ideas obtained through exploration processes, namely improvisation. This is to say that the organization may take too long to crystallize a new product concept, for example, in order to wait for more and more new ideas to incorporate into the product and –ultimately – fail to introduce the product into the market in a timely fashion and thus fail to reap the benefits of those ideas. In fact, in a recent research on the use of improvisation new product development, Miner, Moorman and Bassoff found that this was a major concern for managers in companies taking advantage of this phenomenon, and warned about the potential incidence of this conundrum when pursuing this kind of practice.

Another important consequence of improvisation may be labeled as the amplification of emergent actions. In truth, the appeal of improvisation to organizations, especially those inhabiting business environments, is the ability to increase the deliberateness of realized strategies by acting over their emergent component (Mintzberg, 1995) in order to render it as deliberate as possible. Nonetheless, these latter attempts will themselves have unintended and unexpected consequences thus amplifying the emergent part of organizational actions (Mintzberg

& Waters, 1982). Hopefully, this amplification will be more than compensated by the added deliberateness. However, this is not necessarily so, and organizations that rely on improvisation to handle unexpected events may themselves create those events, falling in a never-ending spiral of complexity and deteriorating manageability, in a way close to what happens when a jazz musician cannot find a way to cohere an improvisation around the underlying score of a song.

Overreliance / addictiveness on improvisation can be another negative consequence of its practice. The rationale underlying this statement parallels the argument put forth before when discussing the increasing of the will to improvise. If this practice continuously produces positive performance effects it may be over-legitimized as the better way to handle all the challenges posed to the group / organization (Miner et al., 1996). Moreover, the feeling of transcendence discussed above is indeed powerful and may become addictive to some members of the organization. In either circumstance, individuals may be tempted to face *every* new challenge by relying on improvisation, when some of them could be tackled in a more efficient manner through planning. In the limit, overreliance on improvisation destroys the organizational own ability to improvise by exploiting to obsolescence and depletion the plans and routines that serve as the 'score' for its practice.

A final negative consequence of organizational improvisation is the increased anxiety and uncertainty faced by its practitioners. The pressure to deliver 'real time' solutions to unexpected and 'unplanned for' problems is not a light endeavor to handle. Not knowing what challenges the organization will face and having but a light and generalized arsenal to tackle them is sure to breed anxiety and uncertainty among its members (Eisenberg, 1990). In modern organizations, this phenomenon is amplified because of the lack of prior interaction based trust because of their reliance on fleeting

multifunctional teams that more often than not have none or, at best, little history of joint work experience. This hinders the formation of trusting relationships among their members and increases the perception of exposure felt by individuals when improvising (Bastien & Hostager, 1988).

ISSUES FOR RESEARCH

The emerging literature on organizational improvisation has been contributing to this concept's legitimization in the organizational research arena. Nonetheless, current literature still suffers from significant weaknesses. Firstly, articles on organizational improvisation are still excessively wedded to jazz theory. Recalling our previous discussion of the evolution of this concept in organizational settings, we can see that later articles on this subject re-center theory development in the improvisational jazz metaphor, after a lively burst of 'jazz free' articles and even some empirical research. As rich as the jazz metaphor is for understanding improvisation in organizational settings, it is still just a metaphor and, in this role, it has important limitations that should not be ignored – at the price of ultimately hindering theory development (Morgan, 1997; McCourt, 1997). To paraphrase Weick (1980), Jazz threatens to become a blinding spot in organizational improvisation theory. Secondly, empirical research on improvisation is still scarce and is mostly based on grounded theory methodology (e.g. Orlikowski, 1996; Orlikowski and Hoffman, 1997; Eisenhardt & Tabrizzi, 1995; Brown & Eisenhardt, 1997). There is only one (!) published quantitative study addressing this phenomenon explicitly – Moorman and Miner's (1998a; 1998b) work on improvisation in new product development, although, as we argued before there are some others that address it in a more implicit manner.

Although apparently in its infancy, organizational improvisation has already raised some relevant issues for organizational theory as a whole.

A first contribution refers to the demystifying of 'pure' organic structures as the 'ideal' form for complex and highly turbulent environments (Lawrence & Lorsch, 1967). In fact, improvisation seems to be an effective mechanism for surviving and thriving in such scenarios, and research has shown that improvisation is a highly structured activity (Barrett, 1998; Brown & Eisenhardt, 1997; Eisenhardt & Tabrizi, 1995). Thus, organizations seem to need some structure even in high volatile environments, although that structure must be qualitatively different from that demanded by more placid competitive contexts.

An unresolved issue in the literature is the need for close relationships between those improvising. Although some authors present them as a 'must' (e.g. Crossan et al., 1996) others argue that improvisation can do well without such 'closeness' and that this only accomplishes a reduction in its effectiveness (e.g. Eisenberg, 1990). Nonetheless, a closer look at the evidence put forth by those espousing the latter argument shows that what in fact happens is that improvising teams are able to build a proxy for that closeness through what has been labeled a 'centering strategy' (Bastien & Hostager, 1988). In this kind of team performance, individuals start with small variations or embellishments on standards or routine / canonical practices and, when social uncertainty is reduced, they pursue wider deviations from those standards, towards achieving purer forms of improvisation (Hutchins, 1991; Weick, 1998). Looking at other fields of organizational theory inquiry we can find other mechanisms for replacing this 'closeness', such as the concept of 'swift trust'. Swift trust is a type of trust that derives not from social similarity or from shared history, but that stems from favorable stereotypes of certain

categories of people and of a positive attitude towards teamwork (Jarvenpaa & Shaw, 1998). This concept is especially relevant in today's global context in which individuals often find themselves working with people they have never met (and probably will never meet) in situations they have never faced (Bettis & Hitt, 1995; Peters, 1992) and thus holds a potentially promising contribution for the study of the coordination issues that arise when an organization attempts to improvise.

Another area that current research on organizational improvisation has still to address is its relationship with the national culture. Common sense would suggest that cultures with high uncertainty avoidance behavior and high power distance would not be very fertile for this type of activity, but only research can tell for sure.

A final issue that claims to be addressed by further research in improvisation in organizational settings is the apparent indiscussible truth that improvisation requires a high level of knowledge, espoused by most authors on this phenomenon (e.g. Crossan et al, 1996; Crossan & Sorrenti, 1997; Hatch, 1997, 1998; Barrett, 1998; Weick, 1990, 1993a, 1993b, 1998, s.d.). This, again, seems to result, from these researchers' overreliance in the jazz metaphor. In jazz, improvisation is a craft only mastered by more senior performers (Berliner, 1994), especially because of the dexterity that playing those instruments normally used by jazz musicians requires. Again, if we look beyond jazz improvisation, we can find an adequate substitute for a high level of knowledge – simplicity of instruments. Research on improvisation use in clinical therapy shows that even the mentally challenged can be adroit improvisers, if provided with the proper instruments (e.g. simpler drums, rattles) (Southworth, 1983). The question remains if we can equip individuals with 'organizational rattles' instead of 'organizational saxophones' for them to improvise more freely and, perhaps, more effectively.

ISSUES FOR PRACTICE

Improvisation seems to be an attractive concept for organizations, especially for those in the business arena. First and foremost, it offers a way for them to remain flexible and adaptive in turbulent environments without having to be purely organic or structure-less, something that always seems to be an awkward thought for most executives. Secondly, improvisation allows for the co-presence of effectiveness and efficiency. It allows the organization to detect change by exploration and then to take advantage of it – or at least to respond to it by exploitation. Although existing in a latent mode, this result is not easily achieved because of the seductiveness of exploration and innovation (Eisenhardt, 1989). Nonetheless, improvisation, because of its high levels of employee involvement and autonomy, is still a daunting image for bureaucratic organizations (Dougherty, 1996), where it will probably mostly happen in ‘skunkworks’ or other informal settings (Stacey, 1996; Peters, 1987).

There are several items to take into account when an organization aims at becoming more improvisational.

Firstly, the deliberate creation of an organization with improvising capabilities is a difficult task (Miner et al., 1996) and it isn’t much of a fertile ground for serious normative theory. This is because improvisation cannot be applied instantaneously but must be grown (Brown & Eisenhardt, 1997), and is more akin to a recipe than to a prescription to be taken at once (Weick, 1993a). Thus, the capability to improvise cannot be implemented by a team of consultants but must instead be grown by the organization itself.

Secondly, abandoning stored procedural memory is a difficult task, even for willing individuals, because of several cognitive limitations of the human mind

(Senge, 1990). However, if this does not happen then improvisation will be more of an espoused theory than an adopted practice, in the organization.

Thirdly, multifunctional teams, because they incorporate people from different professional cultures, with different languages and different repositories of knowledge, may render improvisation very hard to perform. This is a worrying issue if we take into account the recent pro-team bias we have been witnessed in the practitioner-oriented literature (e.g. Katzenbach & Smith, 1992; Peters, 1987, 1992).

A final issue concerns the role of the executive / leader as a manager of meaning and as a catalyst for sensemaking (Weick, 1993a). When discussing the external triggers of improvisation, we stated that very low and levels of discrepancy between expected and actual reality would tend to hinder improvisation (Moorman and Miner, 1995). When these levels are low, the organization and its leader do not have much to be concerned about. This is not the case when these levels are high. Dramatic changes in the environment can have drastic effects on a company's performance and ultimate survival while, arguably, the organization will do little to address those changes – a dynamic that can seriously compromise its longevity. In this type of situations, the role of the manager is to frame environmental changes so that they do not trigger defensive routines in the organization's members in order to render it visible, actionable and ultimately resolvable through improvisation.

CONCLUSION

Literature reviews are often aimed at inscribing some order into the sizeable stream of texts that most topics of research in organizations seem to command these days. Organizational improvisation one of the youngest members of this area of scientific endeavor, thus a literature seems to make little sense at this point. In our

belief, the opposite is true. The path that organizational improvisation seems to be pursuing has two strange attractors, jazz and organizations, and jazz has, to this day, be the most dominant.

Metaphor is an important instrument of knowledge-building, but its use is dangerous when the area of research has passed its birth stage, when there is still no ground for empirical research. After that stage, grounded theory allows for a first set of hypotheses to be built upon which more qualitative methods will be employed to arrive to growingly robust findings. Organizational improvisation has already been subject of grounded theory and even of a limited number of correlational studies. Thus, our first goal in pursuing this review is argue for metaphor to be gradually replaced by other research methods, fitter to a more mature body of knowledge, like organizational improvisation appears to be nowadays. Furthermore, by adopting a critical stance, we were able to uncover some underlying commonalties among texts addressing this phenomenon that were yet to be made explicit. In this vein, we presented an *integrative* (instead of an *alternative*) definition of the organizational improvisation construct and an integrative way to measure it. An additional contribution was made by distinguishing and categorizing the *necessary conditions* for improvisation to occur and the main *influencing factors* determining its degree, performance and results.

Underlying this review, it is also possible to find an effort to translate what has been written on improvisation, which has been mostly directed to the academic public, in a way that practitioners will feel compelled to consider the importance of, if not to adopt, organizational improvisation as a central competence of those organizations dwelling in turbulent and changing environments. By making this statement we are in no way arguing that improvisation is a panacea and that it will only have positive

consequences. The path towards an improvisational organization is laden with much toil for such a skill cannot be bought to a consulting firm, but must purposefully, and more often than not, slowly be grown by the company itself. Moreover, although in increasingly turbulent environments the call for improvisation is hard to quiet, the benefits improvisation yields – better organizational performance and personal feelings of transcendence (Eisenberg, 1990) – also have a flip side, populated with personal anxiety and ever lurking unintended organizational consequences. However, in environments characterized by the Red Queen effect (Kauffman, 1995), where organizations have to keep running just to stay in the same place, and where organizational researchers must precede them in order to have an meaningful impact, studying and implementing / practicing improvisation may appear, in truth, a most daunting challenge. Nonetheless, it can be a most welcome extra boost to allow organizations (and organizational science) to go a little further and, ultimately, to advance and progress.

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Table 1 – Two generations and three stages of theory development in organizational improvisation

Theory stage / Author's generation	Main characteristics	Articles
First / First	<p><i>Grounds:</i> Activities where improvisation is standard practice (jazz, improvisational theatre).</p> <p><i>Goal:</i> Use these instances as metaphors to present a systematic list of characteristics and facilitators of improvisation that can be transposed to organizational settings.</p>	<p>Barrett (1998); Bastien & Hostager (1988); Eisenberg, 1990; Hatch (forthcoming); Kamoche & Cunha (1997, 1998); Meyer (1998); Mirvis (1998); Pasmore (1998); Peplowski (1998); Weick (1990, 1993a)</p>
Second / Second	<p><i>Grounds:</i> Empirical and anecdotal examples of improvisation in organizational settings.</p> <p><i>Goals:</i> Formal definition and characteristics of improvisation in organizational settings.</p>	<p>Crossan et al. (1996); Crossan (1997; 1998); Crossan & Sorrenti (1997); Orlikowski (1996); Orlikowski & Hoffman (1997); Moorman & Miner (1995, 1998a, 1998b); Miner et al. (1996); Perry (1991); Weick (1993b, s.d.)</p>
Third / First	<p><i>Grounds:</i> Improvisation in jazz.</p> <p><i>Goals:</i> Question current theory</p>	<p>Hatch (1997); Hatch (1998); Weick (1998)</p>

	<p>on organizational improvisation and fine-tune a formal definition and characteristics of this phenomenon.</p>	
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Table 2 – Definitions of improvisation across the literature

Author	Definition	Area
A. Organizational perspectives on improvisation		
A1. Explicitly addressing improvisation		
Barrett (1998)	"... fabricating and inventing novel responses without a prescribed plan and without certainty of outcomes; discovering the future that [action] creates as it unfolds" (p. 605)	Management
Bastien & Hostager (1988)	"... the invention, adoption and implementation of new [...] ideas by [individuals] within the context of a shared awareness of the group performance as it unfolds over time." (p. 583)	Organizational innovation
Berkiner (1998)	"... becoming acting managers" (p. 583)	Management
Crossan (1997)	"... spontaneity of action [with a high] level of intuition." (p.39)	General management
Crossan (1998)	"Action [...] taken in a spontaneous and intuitive fashion" (p. 593)	General management
Crossan & Sorrenti (1997)	"intuition guiding action in a spontaneous way" (p. 156)	Organizational learning
Crossan et al. (1996)	"... mak[ing] decisions and adapt[ing] to changing needs and conditions" (p. 26); "... ideas [...] emerge in new and creative ways not planned by the performer" (p. 28); "... take advantage of the opportunities that present themselves in the moment" (p. 34)	Strategy
Deal & Key (1998)	"From judaism [it] is the blend of <i>keva</i> , the planful, and <i>kavanah</i> , capturing the moment" (p. 161)	Corporate celebration
Eisenberg (1990)	"... making do with minimal commonalities and elaborating simple structures in complex ways" (p.154)	Communication and management

Eisenhardt (1997)	"... organizing in a way such that the actors both adaptively innovate and efficiently execute. [...] creating [...] in real time" (p. 255)	Decision making and strategy
Hatch (forthcoming)	"... [to] use structure in create ways that enable [the] alter[ing] the structural foundations of [performance" (p. 5); "... mak[ing] structure implicit and discover what [can be done] that structure supports but does not specify" (p. 12)	Organization
Hatch (1997)	"... intuition guiding action upon something in a spontaneous but historically contextualized way" (p. 181)	Management
Hatch (1998)	"... playing around and [...] with a structure" (pp. 566-567)	Organization Theory
Kamoche & Cunha (1997)	"... the ability to compose and perform contemporaneously" (p. 362)	Teamworking
Kamoche & Cunha (1998)	"... the merging of composition and performance, where both happen contemporaneously" (p. 5)	Product innovation
Meyer (1998)	"in the [...] nick of time [...] devising resourceful solutions to intractable problems" (p. 572)	Organization
Mirvis (1998)	"... make things up as they go along" (p. 587)	Management
Moorman & Miner (1995)	"... extemporaneous and deliberate organizational action" (p. 9)	Marketing
Moorman & Miner (1998a)	"... composition converg[ing] with execution" (p.702)	Organizational memory and innovation
Moorman & Miner (1998b)	"...when the composition and execution of an action converge in time" (p. 1)	New product development
Miner et al. (1996)	"... actions, both spontaneous and novel, that result in the creation of something while actions are unfolding" (p. 3)	New product development

Orlikowski (1996)	"... accomodations to and experiments with [...] everyday contingencies, breakdowns, exceptions and unintended consequences" (p. 65)	Technology and change
Orlikowski & Hoffman (1997)	"... enacting an ongoing series of local innovations that embellish [a prescribed] structure, respond to spontaneous departures and unexpected opportunities, and iterate or build on each other over time" (p.13)	Organizational change
Pasmore (1998)	"... created in real time." (p. 6); "... emergent synergy..." (p. 6); "... behave in a flexible fashion, but only within the bounds of control provided by a [set of agreements]" (p. 8)	Organization and learning
Peplowski (1998)	"... deliberately painting [yourself] into corners just to get out of them" (p. 560)	Management
Perry (1991)	"... formulat[ing] and implement[ing] strategies together in real time" (p. 51)	Strategy
Weick (1990)	"[no] distinction [...] between composition and performance, [...] structure from process, plans from implementation, process from product and prospect from retrospect" (p. 6); "... disciplined imagination" (p. 6); "... think[ing] both compositionally and spur of the moment at the same time" (p.11)	Organizational theory
Weick (1993a)	"... processes and designs that are continuously reconstructed" (p. 348); "... a shifting pattern of attention and meaning imposed on an ongoing stream of social activity" (p. 351)	Organization design

Weick (1993b)	"... when one organizational order collapses, [and] a substitute [is] invented immediately" (p. 640)	Organization design
Weick (1998)	"deal[ing] with the unforeseen, [working] without prior stipulation, [working] with the unexpected" (p. 544); "Improvisation involves reworking precomposed material and designs in relation to unanticipated ideas conceived, shaped and transformed under the special conditions of performance, thereby adding unique features to every creation" (p. 544; quoting Berliner [1994: 241])	Organization theory
Weick (s.d.)	"... composing extemporaneously, producing something on the spur of the moment" (p. 19); "... thinking and doing unfold[ing] almost simultaneously" (p. 19); "... to make something from whatever materials are currently available" (p. 21)	Risk mitigation
A2. Implicitly addressing improvisation		
Brown & Eisenhardt (1997)	"... combin[ing] limited structure with extensive interaction and freedom [to make changes] on current products" (p. 3); "... an organizing strategy of 'making it up as you go along'" (p. 15); "... it means creating a product while simultaneously adapting to changing markets and technologies" (p. 15)	Innovation
Brown & Duguid (1991)	"respond[ing] to whatever the situation itself - both social and physical - throws at [people], [...] build[ing], ad hoc and collaboratively, robust models that do justice to particular difficulties in which [people] find themselves." (p. 47)	Organizational learning
Ciborra (1996)	"... efficiently generate new combinations of resources, routines and structures which are able to match the present, turbulent	Organization structure

	circumstances" (p. 104)	
Eisenhardt & Tabrizi (1995)	"... rapidly building intuition and flexible options so as to cope with an unclear and changing environment" (p. 88); "... combin[ing] real-time learning through design iterations and testing with the focus and discipline of milestones and powerful leaders" (p. 108)	Innovation
Ellis (1982)	"... dealing with [...] Issues as [they] came up" (p. 4)	Strategy
Hutchins (1991)	"... [action] emerg[ing] from the interactions among the participants without any explicit planning" (p. 23); "... a search in a very complex space for a [task] structure and a social structure that fit each other and that get the job done" (p. 23); "... an adaptation process that [takes] place by way of local interactions" (p. 36)	Organizational design
Johnson & Rice (1984)	"... the degree to which an innovation is changed by the adopter in the process of adoption and implementation after its original development" (p. 169)	Technology and change
Klein & Dellarocas (1998)	"... [the] ability to respond effectively when 'exceptions' occur" (p. 1)	Workflow management
Pearson et al. (1997)	"... efforts to turn around the the intensity of a crisis and to keep it from spreading to other, yet uncontaminated parts of the organization and its environment [while it unfolds]" (p. 56)	Crisis management
Slocum et al. (1994)	"... [doing] anytime, [for] anybody, anywhere and anything" (p. 46)	Strategy and learning
B. Psychological perspectives on improvisation		
Berry & Irvine (1986)	"... day-to-day cognitive	Cross-cultural

	performance" (p.272)	cognitive psychology
Gardner & Rogoff (1990)	"...adapting planning to [the] circumstances." (p.481)	Children's developmental psychology
Scribner (1986)	"... mind in action" (p.15)	Cognitive psychology
Southworth (1983)	"... [is] born out of the 'now', [it] is likely to be ever changing and may be unconventional" (p. 204)	Therapy
C. Sociological perspectives on improvisation		
Machin & Carrithers (1996)	"... not hav[ing] a stable response to [external stimuli], but rather [create] diferent responses according to [...] circumstances" (p. 344); "Embody[ing] different senses of person in different situations." (p. 345)	Anthropology
Powers (1981)	"... the extent to which [meaning is] invented by the people immediately involved in a relationship." (p.289)	Sociology
Sharron (1983)	"immediate and spontaneous [...] process of creation" (p. 224)	Sociology
D. Other perspectives on improvisation		
Erickson (1982)	"... strategically adaptive action" (p. 161); "... locally situated variation around [...] nonlocally prescribed themes" (p. 165); "... making new kinds of sense together in adapting to the fortuitous circumstances of the moment" (p.166)	Educational psychology
Leinhardt & Greeno (1986)	"... making rapid on-line decisions" (p. 75); "...planning and decision making embedded in the performance [of a task]" (p. 76)	Educational psychology
Barrett & Peplowski (1998)	"... creating [...] on the spot without a prescribed [...] plan" (p. 558)	Jazz music

Table 3 – Definitions of bricolage across the literature

Author	Definition	Area
Berry & Irvine (1986)	"... someone who works with his hands and uses devious means compared to those of the craftsman" (p. 271-272; quoting Levi-Strauss, 1966:16-17)	Cross-cultural cognitive psychology
Moorman & Miner (1998)	"... making do with the materials at hand" (p. 705; quoting Levi-Strauss, 1967: 17)	Organizational learning
Thayer (1988)	"mak[ing] things work by ingeniously using whatever is at hand, being unconcerned about the 'proper' tools and resources" (p. 239)	Leadership
Weick (1990)	"... build[ing] something that is recognizable from whatever is at hand" (p. 11)	Organizational theory
Weick (1993a)	"... a process of sensemaking that makes do with whatever materials are at hand" (p. 351); "... to use whatever resources and repertoire one has to perform whatever task one faces" (p. 352)	Organizational design
Weick (1993b)	"...someone able to create order from whatever materials were at hand" (p. 639); "...being able to, ususally in the company of similarly skilled people, to form the materials or insights [available] into novel combinations" (p. 640)	Organizational structure
Weick (s.d.)	"making do with whatever is at hand, - and skill at working in an ad hoc manner" (p. 20)	Risk mitigation

Table 4. Triggers of organizational improvisation

Author(s)	Triggers				
	Reality is objective				Reality is subjective
	External causes		Internal causes		Enactment of a new environment
	Complexity	Fortuity / Luck	New vision	Flaw in mental models	
Barrett (1998)	Yes	Yes			
Bastien & Hostager (1988)	Yes	Yes	Yes		Yes
Berkiner (1998)	Yes				Yes
Brown & Duguid (1991)	Yes	Yes	Yes	Yes	Yes
Brown & Eisenhardt (1997)	Yes	Yes			
Ciborra (1996)	Yes	Yes	Yes	Yes	Yes
Crossan & Sorrenti (1997)	Yes	Yes			
Crossan (1997)	Yes	Yes	Yes	Yes	
Crossan (1998)	Yes	Yes			
Crossan et al. (1996)	Yes	Yes		Yes	
Deal & Key (1998)		Yes	Yes		Yes
Eisenberg (1990)	Yes		Yes		
Eisenhardt & Tabrizi (1995)	Yes	Yes			
Eisenhardt (1997)	Yes	Yes	Yes		
Ellis (1982)	Yes	Yes	Yes		
Hatch (1997)		Yes			Yes
Hatch (1998)	Yes				Yes
Hatch (forthcoming)			Yes		Yes
Hutchins (1991)	Yes	Yes	Yes		
Johnson & Rice (1984)	Yes		Yes		Yes
Kamoche & Cunha (1997)	Yes	Yes			
Kamoche & Cunha (1998)	Yes	Yes			
Klein & Dellarocas (1998)	Yes	Yes		Yes	
Meyer (1998)		Yes		Yes	

Miner et al. (1996)	Yes	Yes			
Mirvis (1998)		Yes			Yes
Moorman & Miner (1995)	Yes	Yes			
Moorman & Miner (1998a)	Yes	Yes			
Moorman & Miner (1998b)	Yes	Yes			
Orlikowski & Hoffman (1997)	Yes	Yes			
Orlikowski (1996)	Yes	Yes			
Pasmore (1998)	Yes	Yes			
Pearson et al. (1997)	Yes	Yes		Yes	
Peplowski (1998)			Yes		Yes
Perry (1991)			Yes		Yes
Slocum et al. (1994)	Yes	Yes	Yes	Yes	
Weick (1990)	Yes		Yes		Yes
Weick (1993a)	Yes	Yes	Yes	Yes	Yes
Weick (1993b)		Yes		Yes	
Weick (1998)		Yes	Yes		Yes
Weick (s.d.)		Yes		Yes	Yes

Table 5. Organizational conditions for improvisation

Author(s)	Experimental culture			Minimal structure			Low procedural memory
	Tolerate / promote mistakes	Promote action	Sense of urgency	Invisible controls	Clear goals	Short term milestones	
Barrett (1998)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bastien & Hostager (1988)		Yes		Yes			
Berkiner (1998)	Yes	Yes					
Brown & Duguid (1991)	Yes	Yes	Yes	Yes	Yes	Yes	
Brown & Eisenhardt (1997)		Yes	Yes	Yes	Yes	Yes	
Ciborra (1996)		Yes	Yes		Yes		Yes
Crossan & Sorrenti (1997)	Yes	Yes		Yes			
Crossan (1997)	Yes	Yes	Yes	Yes			Yes
Crossan (1998)	Yes	Yes	Yes	Yes			Yes
Crossan et al. (1996)	Yes	Yes		Yes			
Deal & Key (1998)	Yes	Yes			Yes		
Eisenberg (1990)	Yes	Yes			Yes		
Eisenhardt & Tabrizi (1995)	Yes	Yes	Yes		Yes	Yes	
Eisenhardt (1997)		Yes	Yes	Yes			
Ellis (1982)	Yes	Yes		Yes	Yes		
Hatch (1997)	Yes	Yes		Yes	Yes		
Hatch (1998)	Yes	Yes		Yes		Yes	Yes
Hatch (forthcoming)	Yes	Yes		Yes			
Hutchins (1991)			Yes	Yes	Yes		
Johnson & Rice (1984)	Yes	Yes		Yes	Yes		
Kamoche & Cunha (1997)	Yes	Yes	Yes	Yes			
Kamoche & Cunha (1998)	Yes	Yes		Yes	Yes		
Klein & Dellarocas (1998)	Yes			Yes	Yes	Yes	
Meyer (1998)	Yes	Yes	Yes	Yes	Yes		
Miner et al. (1996)		Yes	Yes		Yes		Yes
Mirvis (1998)		Yes	Yes		Yes		Yes
Moorman & Miner (1995)		Yes			Yes		Yes
Moorman &							Yes

Miner (1998a)							
Moorman & Miner (1998b)		Yes	Yes				Yes
Orlikowski & Hoffman (1997)	Yes	Yes		Yes	Yes		Yes
Orlikowski (1996)	Yes	Yes		Yes	Yes		Yes
Pasmore (1998)	Yes	Yes			Yes		
Pearson et al. (1997)			Yes	Yes	Yes		
Peplowski (1998)		Yes		Yes	Yes		
Perry (1991)		Yes					
Slocum et al. (1994)		Yes			Yes		
Weick (1990)	Yes	Yes		Yes		Yes	
Weick (1993a)	Yes	Yes		Yes	Yes	Yes	Yes
Weick (1993b)		Yes	Yes	Yes	Yes		Yes
Weick (1998)	Yes	Yes	Yes	Yes	Yes	Yes	
Weick (s.d.)		Yes	Yes	Yes	Yes		Yes

Table 6A. Influencing factors of organizational improvisation

Author(s)	Leadership		Member's characteristics				Fluid communication.
	Rotating leadership	Serving leadership	Skill	Creativity	Diversity	Dealing with affectivity	
Barrett (1998)			Yes	Yes		Yes	Yes
Bastien & Hostager (1988)	Yes	Yes	Yes	Yes			Yes
Berkiner (1998)		Yes		Yes	Yes		
Brown & Duguid (1991)			Yes	Yes	Yes		Yes
Brown & Eisenhardt (1997)	Yes			Yes	Yes		Yes
Ciborra (1996)					Yes		Yes
Crossan & Sorrenti (1997)		Yes	Yes	Yes	Yes		Yes
Crossan (1997)	Yes	Yes	Yes	Yes			Yes
Crossan (1998)	Yes		Yes	Yes	Yes	Yes	Yes
Crossan et al. (1996)	Yes		Yes	Yes	Yes	Yes	Yes
Deal & Key (1998)		Yes		Yes	Yes	Yes	Yes
Eisenberg (1990)	Yes		Yes		Yes	Yes	Yes
Eisenhardt & Tabrizi (1995)	Yes			Yes	Yes		Yes
Eisenhardt (1997)			Yes	Yes			Yes
Ellis (1982)				Yes			
Hatch (1997)		Yes	Yes	Yes	Yes		
Hatch (1998)			Yes	Yes		Yes	Yes
Hatch (forthcoming)		Yes	Yes	Yes		Yes	Yes
Hutchins (1991)	Yes		Yes	Yes			Yes
Johnson & Rice (1984)		Yes	Yes	Yes			Yes
Kamoche & Cunha (1997)	Yes	Yes	Yes	Yes		Yes	Yes
Kamoche & Cunha (1998)	Yes	Yes	Yes	Yes		Yes	Yes
Klein & Dellarocas (1998)				Yes			
Meyer (1998)	Yes		Yes				Yes
Miner et al. (1996)			Yes	Yes			Yes
Mirvis (1998)	Yes						Yes
Moorman & Miner (1995)			Yes				Yes

Moorman & Miner (1998a)			Yes	Yes			Yes
Moorman & Miner (1998b)				Yes			Yes
Orlikowski & Hoffman (1997)			Yes				Yes
Orlikowski (1996)			Yes		Yes		Yes
Pasmore (1998)			Yes	Yes			
Pearson et al. (1997)		Yes	Yes	Yes	Yes		Yes
Peplowski (1998)	Yes	Yes	Yes				Yes
Perry (1991)				Yes	Yes		Yes
Slocum et al. (1994)							Yes
Weick (1990)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weick (1993a)	Yes		Yes	Yes			Yes
Weick (1993b)	Yes	Yes	Yes	Yes		Yes	Yes
Weick (1998)			Yes	Yes			Yes
Weick (s.d.)	Yes	Yes	Yes	Yes		Yes	Yes

Table 6B. Influencing factors of organizational improvisation (continued)

Author(s)	Memory-related factors			Organizational configuration			General purpose resources
	Rich declarative memory	Practicing improvisation	Will to depart from memory	Disclosure relationships	Collateral organization	Small groups	
Barrett (1998)	Yes	Yes	Yes			Yes	
Bastien & Hostager (1988)	Yes			Yes		Yes	
Berkiner (1998)	Yes		Yes	Yes			
Brown & Duguid (1991)	Yes	Yes	Yes	Yes	Yes	Yes	
Brown & Eisenhardt (1997)	Yes		Yes				Yes
Ciborra (1996)		Yes	Yes				Yes
Crossan & Sorrenti (1997)	Yes	Yes	Yes			Yes	Yes
Crossan (1997)	Yes	Yes	Yes	Yes		Yes	
Crossan (1998)	Yes	Yes	Yes	Yes		Yes	
Crossan et al. (1996)	Yes		Yes	Yes		Yes	
Deal & Key (1998)	Yes		Yes	Yes			
Eisenberg (1990)	Yes		Yes		Yes	Yes	
Eisenhardt & Tabrizi (1995)	Yes		Yes				Yes
Eisenhardt (1997)	Yes						Yes
Ellis (1982)		Yes	Yes				Yes
Hatch (1997)	Yes					Yes	
Hatch (1998)	Yes	Yes		Yes		Yes	
Hatch (forthcoming)	Yes		Yes				
Hutchins (1991)	Yes	Yes				Yes	Yes
Johnson & Rice (1984)	Yes						Yes
Kamoche & Cunha (1997)	Yes		Yes				
Kamoche & Cunha (1998)	Yes		Yes				
Klein & Dellarocas (1998)			Yes				Yes
Meyer (1998)	Yes			Yes		Yes	
Miner et al. (1996)	Yes		Yes	Yes			Yes
Mirvis (1998)		Yes	Yes	Yes		Yes	
Moorman & Miner (1995)	Yes		Yes		Yes		

Moorman & Miner (1998a)	Yes		Yes				
Moorman & Miner (1998b)	Yes		Yes				
Orlikowski & Hoffman (1997)	Yes		Yes				Yes
Orlikowski (1996)	Yes						Yes
Pasmore (1998)	Yes		Yes				
Pearson et al. (1997)	Yes	Yes	Yes	Yes		Yes	Yes
Peplowski (1998)	Yes						Yes
Perry (1991)	Yes						Yes
Slocum et al. (1994)	Yes		Yes				
Weick (1990)	Yes		Yes	Yes		Yes	Yes
Weick (1993a)	Yes	Yes	Yes		Yes	Yes	Yes
Weick (1993b)	Yes	Yes	Yes	Yes		Yes	Yes
Weick (1998)	Yes	Yes	Yes	Yes			
Weick (s.d.)	Yes	Yes	Yes	Yes		Yes	Yes

Table 7. Positive outcomes of organizational improvisation

Author(s)	Flexibility	Learning	Higher motivation		Affective outcomes	
			To work	To improvise	Transcendence	Team building
Barrett (1998)	Yes	Yes	Yes	Yes	Yes	
Bastien & Hostager (1988)	Yes	Yes				
Berkiner (1998)	Yes	Yes				
Brown & Duguid (1991)	Yes	Yes	Yes	Yes		Yes
Brown & Eisenhardt (1997)	Yes		Yes			
Ciborra (1996)	Yes	Yes	Yes	Yes		
Crossan & Sorrenti (1997)	Yes	Yes	Yes	Yes	Yes	
Crossan (1997)	Yes	Yes	Yes			Yes
Crossan (1998)	Yes	Yes	Yes	Yes		Yes
Crossan et al. (1996)	Yes		Yes			
Deal & Key (1998)	Yes	Yes	Yes			Yes
Eisenberg (1990)	Yes					Yes
Eisenhardt & Tabrizi (1995)	Yes	Yes	Yes			
Eisenhardt (1997)	Yes					
Ellis (1982)	Yes	Yes		Yes		
Hatch (1997)	Yes				Yes	Yes
Hatch (1998)	Yes	Yes		Yes	Yes	
Hatch (forthcoming)	Yes	Yes				
Hutchins (1991)	Yes	Yes		Yes		

Johnson & Rice (1984)	Yes	Yes		Yes		
Kamoche & Cunha (1997)	Yes	Yes				
Kamoche & Cunha (1998)	Yes	Yes				
Klein & Dellarocas (1998)	Yes	Yes				
Meyer (1998)	Yes				Yes	
Miner et al. (1996)	Yes	Yes		Yes		
Mirvis (1998)	Yes	Yes		Yes		
Moorman & Miner (1995)	Yes	Yes				
Moorman & Miner (1998a)	Yes	Yes				
Moorman & Miner (1998b)	Yes	Yes				
Orlikowski & Hoffman (1997)	Yes	Yes				
Orlikowski (1996)	Yes	Yes		Yes		
Pasmore (1998)	Yes					
Pearson et al. (1997)	Yes	Yes				
Peplowski (1998)	Yes		Yes		Yes	
Perry (1991)	Yes	Yes				
Slocum et al. (1994)	Yes	Yes				
Weick (1990)	Yes	Yes	Yes	Yes	Yes	Yes
Weick (1993a)	Yes	Yes				
Weick (1993b)	Yes	Yes				Yes
Weick (1998)	Yes	Yes		Yes	Yes	

Weick (s.d.)	Yes	Yes				Yes
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Table 8. Negative outcomes of organizational improvisation

Author(s)	Biased learning	Opportunity traps	Amplification of emergent action	Addictiveness to improvisation	Increased anxiety
Barrett (1998)		Yes	Yes		Yes
Bastien & Hostager (1988)	Does not address negative outcomes				
Berkiner (1998)	Does not address negative outcomes				
Brown & Duguid (1991)					Yes
Brown & Eisenhardt (1997)	Does not address negative outcomes				
Ciborra (1996)					Yes
Crossan & Sorrenti (1997)	Does not address negative outcomes				
Crossan (1997)	Does not address negative outcomes				
Crossan (1998)	Does not address negative outcomes				
Crossan et al. (1996)	Does not address negative outcomes				
Deal & Key (1998)	Does not address negative outcomes				
Eisenberg (1990)				Yes	Yes
Eisenhardt & Tabrizi (1995)	Does not address negative outcomes				
Eisenhardt (1997)	Does not address negative outcomes				
Ellis (1982)			Yes		
Hatch (1997)	Does not address negative outcomes				
Hatch (1998)	Does not address negative outcomes				
Hatch (forthcoming)	Does not address negative outcomes				
Hutchins (1991)	Does not address negative outcomes				
Johnson & Rice (1984)	Does not address negative outcomes				
Kamoche & Cunha (1997)	Yes	Yes	Yes		Yes
Kamoche & Cunha (1998)	Yes	Yes	Yes		Yes
Klein & Dellarocas (1998)	Does not address negative outcomes				
Meyer (1998)					Yes
Miner et al. (1996)		Yes	Yes	Yes	

Mirvis (1998)					Yes
Moorman & Miner (1995)					Yes
Moorman & Miner (1998a)	Does not state negative outcomes				
Moorman & Miner (1998b)	Does not address negative outcomes				
Orlikowski & Hoffman (1997)	Does not address negative outcomes				
Orlikowski (1996)	Does not address negative outcomes				
Pasmore (1998)	Does not address negative outcomes				
Pearson et al. (1997)	Does not address negative outcomes				
Peplowski (1998)	Does not address negative outcomes				
Perry (1991)	Does not address negative outcomes				
Slocum et al. (1994)	Does not address negative outcomes				
Weick (1990)	Does not address negative outcomes				
Weick (1993a)	Does not address negative outcomes				
Weick (1993b)	Does not address negative outcomes				
Weick (1998)		Yes			Yes
Weick (s.d.)	Does not address negative outcomes				

Table 9. Empirical and metaphorical grounding of texts on organizational improvisation

Author(s)	Grounding	Area / Subject
Barrett (1998)	Metaphorical	Jazz
Bastien & Hostager (1988)	Empirical	Jazz
Berkiner (1998)	Metaphorical	Jazz
Brown & Duguid (1991)	Empirical	Organizational practice
Brown & Eisenhardt (1997)	Empirical	New product development
Ciborra (1996)	Anecdotal	Organization structure
Crossan & Sorrenti (1997)	Anecdotal	Organizational learning
Crossan (1997)	Anecdotal / Metaphorical	Management / Improvisational theatre
Crossan (1998)	Anecdotal / Metaphorical	Organizational improvisation / Improvisational theatre
Crossan et al. (1996)	Anecdotal / Metaphorical	Management / Improvisational theatre / Jazz
Deal & Key (1998)	Anecdotal	Corporate celebration
Eisenberg (1990)	Metaphorical	Jazz
Eisenhardt & Tabrizi (1995)	Empirical	New product development
Eisenhardt (1997)	Anecdotal	Strategy and decision making
Ellis (1982)	Anecdotal	Business management
Hatch (1997)	Metaphorical	Jazz
Hatch (1998)	Metaphorical	Jazz
Hatch (forthcoming)	Metaphorical	Jazz
Hutchins (1991)	Empirical	Coordination
Johnson & Rice (1984)	Empirical	Technology implementation
Kamoche & Cunha (1997)	Metaphorical	Jazz
Kamoche & Cunha (1998)	Metaphorical	Jazz
Klein & Dellarocas (1998)	Anecdotal	Workflow systems
Meyer (1998)	Metaphorical	Jazz
Miner et al. (1996)	Empirical	New product development
Mirvis (1998)	Metaphorical	Jazz
Moorman & Miner (1995)	Theoretical	New product development
Moorman & Miner (1998a)	Theoretical	New product development
Moorman & Miner (1998b)	Empirical	New product development
Orlikowski & Hoffman (1997)	Empirical	Technology implementation
Orlikowski (1996)	Empirical	Technology implementation
Pasmore (1998)	Metaphorical	Jazz

Pearson et al. (1997)	Anecdotal	Crisis management
Peplowski (1998)	Metaphorical	Jazz
Perry (1991)	Anecdotal	Business strategy
Slocum et al. (1994)	Anecdotal	Business management
Weick (1990)	Metaphorical	Jazz
Weick (1993a)	Metaphorical	Jazz / bricolage / theater
Weick (1993b)	Anecdotal	Firefighting
Weick (1998)	Metaphorical	Jazz
Weick (s.d.)	Anecdotal	Firefighting