“Antecedences and determinants of improvisation in firms”

AUTHORS	David Mueller

ARTICLE INFO	David Mueller (2011). Antecedences and determinants of improvisation in firms. *Problems and Perspectives in Management*, *9*(4)
RELEASED ON	Tuesday, 14 February 2012
JOURNAL	"Problems and Perspectives in Management"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
0	0	0

David Mueller (Germany)

Antecedences and determinants of improvisation in firms

Abstract

The case of Tepco in Japan has demonstrated that despite all planning efforts, improvisation, in addition to planning, is a necessary form of problem solving, which has received scarce attention in the literature. Available studies have examined the nature of group improvisation without clarifying the characteristics of a solo improvisation. Improvisation may lead to a successful or an unsuccessful result – just as planning can. Therefore, the present paper is based on an intensive discussion of improvisation in the field of music to describe and identify the nature and antecedences of individual improvisation in companies. Improvisation is defined as a process of problem solving that starts without an exhaustive reflection of options and their consequences and which incorporates the interim results of the realization for the further problem-solving process through simultaneous feedback. Based on the analyses of improvisation in music, the actor-problem relation, the continuous orientation of the actor and the general framework are identified. Successful improvisation in companies requires, as in the field of music, a problem-adequate qualification, experience, expertise, and, thus, the completion of a long-term training period.

Keywords: limits of planning, flexibility, decision making, emergency response, intuition.
JEL Classification: M10, M20.

Introduction

The assessment of planning and improvisation in business administration is clear: planning is defined as superior to improvisation in the long term and as a desirable form of problem solving, whereas improvisation plays a subordinate role. Owing to planning limits, actors are improvising within companies to a greater extent compared with theoretical representations. This can be ascribed to deficiencies in the practical implementation of theoretical findings, but also to shortcomings in the alignment of problem-solving research. Thus, it is, in addition to the further development of planning models and methods, equally important to investigate the relevant and determining factors behind improvisation in companies and, based on this, to integrate improvisation into planning theory. Improvisation in music is recognized as an admirable skill, which can be acquired, trained and improved. However, not every musician is able to improvise at the same high level – even when he/she is trying to. That is why this article concentrates on the determining factors of improvisation in order to assess which factors are relevant for the quality of improvisation. For this, after analysing the level of knowledge regarding improvisation in the business literature, the determinants of improvisation are examined in an area in which it has achieved a particular stage of development – the field of music.

In organizational research, this procedure has been chosen with reference only to jazz music to determine the analogies between improvisation in music and organizations and in order to derive recommendations for the further development of this area of research (Crossan and Sorrenti, 1997; Hatch, 1997; Chelariu, Johnston and Young, 2002; Moormann and Miner, 1998; Weick, 1998; Zack, 2000; Leybourne, 2007; Crossan et al., 2005; Bernstein and Barrett, 2011). For the investigation of improvised problem solutions in companies, the limitation to jazz music seems to be not expedient. For this reason, in the following article the universal characteristics of individual musical improvisation are examined.

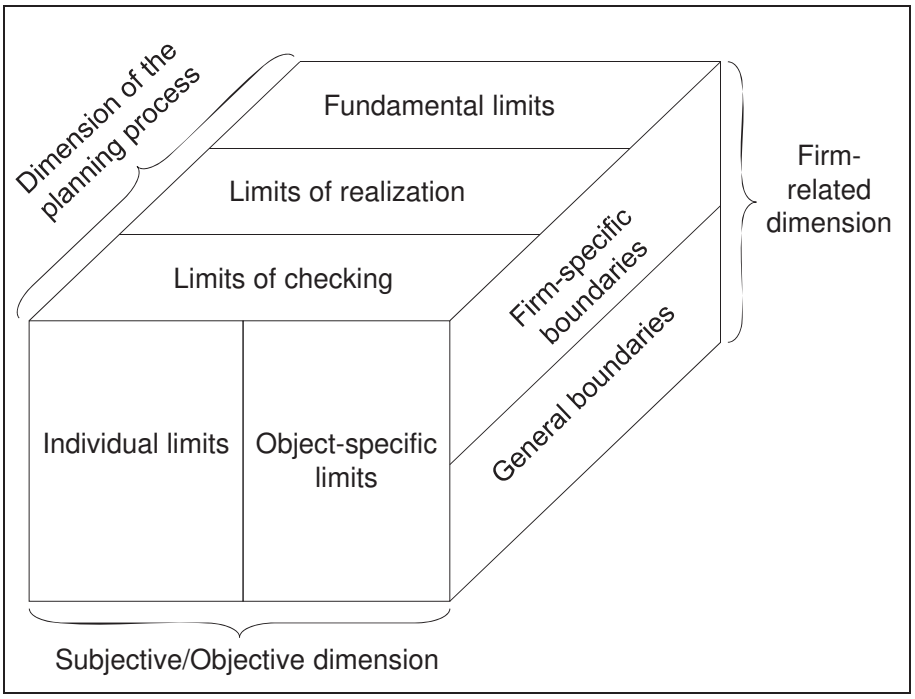
1. Improvisation's definition and significance in business administration

1.1. Limits of planning as the sources of improvisation. In an ideal management process, decisions are planned, realized and checked. Planning is described as a mental draft of goals to be achieved in the future as well as the required measures. The description and discussion of planning are very considerable and detailed in decision theory. In the course of the current economic discussion, different views on planning and numerous definitions of the concept of planning have emerged, which diverge dependent on problem and time.

Planning is considered as a reflexive, information-processing, systematic and rational process to solve decision problems for the purposes of goal orientation, the reduction of complexity and risk and the increase in flexibility (Simon, 2008, p. 240). The result of planning is a plan and the realization of this plan should enable the achievement of goals. The necessity of planning for successful management has been emphasised repeatedly, although empirical data do not provide clear evidence of this relationship. The use of planning leads to relief for the actor and counteracts, in the sense of a kind of stress prevention, the strain experienced by the foresighted development of measures and, in addi-

tion to this, by the early planning of alternative procedures. With this relatively complex procedure, stressful situations can be avoided in advance. Thus, the synoptic, incremental and heuristic understanding of planning is covered in the following discussion.

In addition to the concept of planning, planning limits are relevant for consideration since they define the possibility and necessity of an unplanned problem solution. Planning is marked by boundaries in the dimensions of process, subject/object and company (Figure 1).



Source: Own representation, based on Working Committee for Integrated Company Planning (1991, p. 817).

Fig. 1. Limits of planning

Fundamental boundaries result from tensions between planning and knowledge as well as between planning and coincidence. The future orientation of planning ensures that future-related knowledge, beyond the statement that the future is uncertain, is not possible. Related to this antinomy is the ratio of planning to coincidence. Despite all procedures for the consideration of uncertainty, information risks may exist, if, apart from the states of environment that are regarded as probable, other situations occur that were not predictable (Boin and Lagadec, 2000, p. 188). "*It is obvious that it would be best if we could foresee every eventuality, but it is utopian to believe that this is possible*" (Andersen, 2003, p. 130). In addition to these fundamental boundaries, some limits result from the separation of planning and realization. Not until the realization phase does it become apparent whether the plan is realizable and how applicable the employed assumptions, predictions and solution procedures are (Lagadec, 1993, pp. 83-84). It has to be pointed out that planning is only applicable for those parameters that can be checked afterwards.

In the subjective/objective dimension, planning limits are considered, on the one hand, by the characteristics of the planning problem itself and, on the other hand, by the planning actor. Object-related boundaries become clear through the demand for efficiency made on planning, which implies that the effort caused by planning should be lower than its benefits. It is possible, but it is not efficient to develop a plan for every possible outcome because this plan would look like the *Encyclopedia Britannica* (Silva and McGann, 1995, p. 44). Subject-related boundaries result from the motivational impact of plans or rather the plan's development on individuals, the planning mentality of people as well as from the limited knowledge of the actor regarding planning instruments. An important role is played by the valuation of and attitude towards the process of planning and its result, the plan. This attitude is part of the national culture as well as of the company culture (Aram and Walochik, 1996; Keys, Denton and Miller, 1994, p. 387; Mintzberg, 1994a, pp. 414-415). National culture is an important parameter in defining a rational decision process (Thomas, 2008, pp. 93-116) and thereby for structuring the planning process and determining responsibilities (Mead, 1994, pp. 465-472).

Company-related planning boundaries result from the different characteristics of companies such as company size, internationality or sector. A classic boundary of company planning is planning capacity,

which correlates with company size. General boundaries do not depend on the company; they are determined by other factors, e.g., national culture.

Figure 1 shows that every company, every problem and every actor suffer from limitations of making and realizing a plan. Some of these limits led to the development and controversial discussion of the concept of emergent strategies (for the development and description of the concept see Mintzberg and Waters, 1985; Mintzberg, 1994b; Mintzberg, 1994c, p. 25; Mintzberg, 1978, p. 945; Mintzberg, 1987, pp. 68-70. For critical remarks see Kenyon and Mathur, 1993, pp. 357-358; Ansoff, 1991), which will not be discussed further. Instead, the highlighted question for the way of problem solving outside these boundaries will be analyzed. We will call this way of problem solving "improvisation" for further discussion.

1.2. Recent developments in defining and structuring improvisation. Nearly all activity is improvisational to some extent (Alperson, 2010, p. 273). Defining the content and procedure of improvisation is possible with respect to:

- the literature and knowledge of business administration; and/or
- the literature and knowledge of musical theory and musical performance.

The main part of the discussion and definition of improvisation is based on a short and superficial look at jazz improvisation, since this is established as an independent and contemporary form of art (Aram and Walochik, 1996, pp. 78-79; Crossan and Sorrenti, 1997, p. 157; Hatch, 1997, p. 182; Leybourne, 2006, pp. 365-369; Crossan et al., 2005, pp. 131-133). By analyzing jazz improvisation, its characteristics are determined and from these characteristics conclusions for the structuring of organizations can be drawn. It is concluded that an activity is the more improvised, the shorter the time between outlining and realizing the activity is (Weick, 1998, pp. 544-545; Moorman and Miner, 1998, p. 3). Other authors – using the jazz metaphor too – define improvisation as a real-time decision-making process as well as a circular learning process, as intuition-led acting in a spontaneous way or as non-predictable emerging behavior that is based on existing resources and quality standards and is thus disciplined (Chelariu, Johnston and Young, 2002, p. 142; Crossan and Sorrenti, 1997, p. 156). The analysis of the different jazz-based definitions results in the following common characteristics (Roux-Dufort and Vidaillet, 2003, pp. 89-90; Stein, 2011, pp. 17-18):

- Improvisation consists of the simultaneous planning, selection of activity and performance.
- Minimal structures allow flexible action and lead to improvisation at the same time.
- Intuition and experience are critical and yet common components of all definitions of improvisation.
- The combination and reconfiguration of available resources during improvisation.

By means of the approaches, rules and coordination mechanisms used by jazz musicians, which structure and lead a group improvisation, recommendations for the formation of organizational rules and structures can be derived (Barrett, 1998, pp. 617-620). From the author's point of view, there is a main disadvantage in those studies: the concentration on group improvisation. This concentration is reasonable from the view of organization theory, but already represents a higher developmental stage of improvisation. In order to determine the nature and influencing factors of improvisation, it is necessary to examine the basis for individual improvisation.

2. Consideration of solo improvisation in music as an analytical framework

2.1. Definitions, types and structures of improvisation. The origin of all vocal and instrumental music is improvisation, spontaneous music making from an immediate idea. Composition, however, describes the conscious, repeatedly reflected on, written down process of the creation of music before the performance that is repeatable in this way (Karkoschka, 1973, p. 96; Rösing and Bruhn, 1997, p. 515; Philipp, 2003, p. 539). Every musical performance takes part in a continuum between interpretation, ornamentation, variation and improvisation. Bach, Mozart and Mendelssohn were well known for their extemporised performances and Handel included improvised passages in his compositions (Alperson, 2010, p. 275). A distinction has still being made between '*composito*', as the performance of composed music, and '*sortisatio*', as improvised music, in the 16th and 17th centuries. The ability to improvise extended musical forms developed into a crucial requirement for organ players in these times (Kingscott and Durrant, 2010, p. 131). Improvisation was developed from ornamentation, coloration and diminuation to an independent way of musical performance on the most powerful instrument – the organ – in the 17th and 18th centuries. In all styles of baroque, improvisation was integrated into the melodic and harmonic creation of music in order to decorate, to supplement, to vary, to embellish and to improve it (Bailey, 1992, p. 21).

Improvisation has always been an admirable skill not only in music but also in other arts, e.g., the theater. During an improvisation, existing works are changed or entirely new forms of music are created. In order to differentiate improvisation and composi-

tion, the moment of the development of a piece of music and the moment of its performance are compared. For a composition, ideas and inspirations are recorded in writing or in terms of sound engineering and are subject to review before the performance. The development of the piece is temporally previous to its performance. On the contrary, improvisation thoughts are immediately realized, and thus the development and performance of the work take place at the same time. Improvising is the simultaneous invention and realization of music (Koerppen, 1973, p. 13; Sikora, 2003, p. 477; Philipp, 2003, p. 539). Owing to the creative process of the performance, however, the differentiation of composition and improvisation cannot be located exactly. Even the performance of composed works includes a rest of improvisatory elements so that there is rather a continuum of improvisation (Alperson, 2010, p. 273).

With regard to orientation, free and bound improvisation can be distinguished. Within the scope of bound improvisation, the musician improvises on a given theme or motif, whereas free improvisation is only bound to a few basic rules. Within the course of free improvisation, the musician has a great deal of freedom. By contrast, for the bound variant there are guidelines regarding rhythm, melodics, harmony, sound and form (Sikora, 2003, p. 474). However, certain general guidelines also exist for free improvisation, namely the arrangements, by which the improvisation is led and structured. These arrangements are often merely verbally agreed or they originate from the performance practice and are used implicitly (Viera, 1992, pp. 31-32).

An improvisation may be partitioned into a sequence of non-overlapping sections (Pressing, 1988, pp. 152-153). Each of these will be denoted as an event cluster E_i. At specific points of time, an event cluster-generating action is realized. These points of time are often bound to local musical criteria such as pauses, figures or cadences. Improvisation is the result and the specification of the realized decisions, namely the sequence of events and situations for which the generation of a cluster follows on the basis of the preceding event cluster. The improvisation I can be defined as the ordered union of these event clusters: $I = \{E_1, E_2 ... E_N\}$. This is a unique specification based on the timing of the central decision making by the musician. The improvisation can be interpreted as a series of situations, which is based on previous event clusters $\{E\}$ and entails the generation of the subsequent cluster E_{i+1}. This generation is guided by an underlying piece-specific scheme, which the improviser uses and is called reference R, a set of current goals Γ and his/her long-term memory M. The musician continuously processes information from the different sections and preceding clusters, compares the actual with the intended state and initiates that action to define the following state. This form of simultaneous realization and feedback allows the musician to recognize mistakes within a cluster and to rework them, in this or the following clusters, to productive acts, so that, in retrospective analysis, a flawless performance results (Ferand, 1938, p. 17). Thus, the continuation of the improvisation is restricted by the realization so far, whereby a reference to the past is determined. The previous beats set a number of possibilities to continue for the musician. The process of event cluster generation follows from: $(\{E\}, R, \Gamma, M)_i \rightarrow E_{i+1}$. This scheme will help us structure the following discussion.

2.2. Influences on extemporised performance. In the course of the current analysis using jazz improvisation as the basis for considering organization theory, different characteristics were determined (Weick, 1998, pp. 544-550; Peplowski, 1998, pp. 560-561; Barrett, 1998, pp. 607-616). To these characteristics belongs the provocative competence, namely the ability of the musician to develop new melodies by leaving known figures and structures, as well as the musician's ability to rework notes into new combinations by further development, which were classified as a mistake in the current consideration. A further characteristic of jazz improvisation is the use of minimal structures allowing a maximum of flexibility for the musicians and also the variable distribution of tasks during the interaction. In the context of the variable distribution of tasks, variation is defined between being supported by and supporting a feature of jazz improvisation, giving musicians the opportunity to be supported by the ensemble members during their solo and, in the further course, to support other members with their solos. In order to allow a successful integration into an ensemble, the rules, standards and views of the ensemble must be learned by the musician, which represents a characteristic as well.

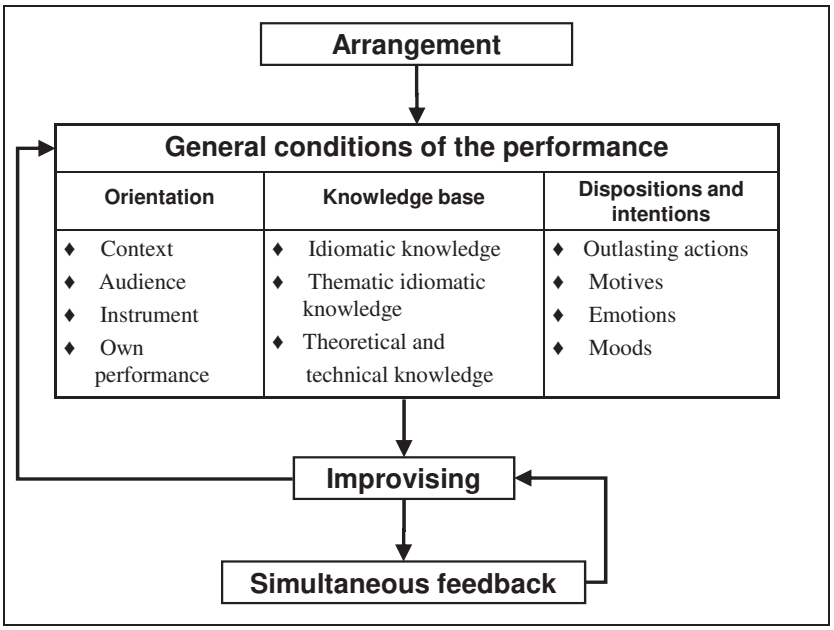
As these descriptions do not include important factors (e.g., temporal feedback and orientation), a different, more fundamental approach is chosen. A number of parameters on the micro- and macro-structural level must be integrated by the improvising musician. For the consideration and combination of the form, melody, harmony and tone color of these components, musicians draw on a broad knowledge base (Clarke, 1988, pp. 7-9; Pressing, 1988, pp. 134-138).

Feedback, error correction and the reaction of the improvising person are, owing to simultaneity, superficially unconscious and intuitive (Pressing, 1988, pp. 147-149; Berliner, 1994, p. 16). Feedback, however,

does not only take place unconsciously. Intuition is based on the recognition and evaluation of patterns, uses the recognition of situations and models and thus draws on implicit knowledge (Henden, 2004, pp. 54-59; Sayegh, Anthony and Perrewé, 2004, pp. 192-193). This implicit knowledge and also the abilities to use known structures and elements are acquired by the musician by rehearsing, repeating and varying structural elements as well as by practicing improvisation (Berliner, 1994, pp. 221-227).

The quality of the improvisation depends on the musician's knowledge base and his or her personality profile. For a good improvisation of classical music, a different knowledge base is required than is for a good blues improvisation. The knowledge of different musical styles with their own languages can be described as idiomatic knowledge. A musical idiom is marked by a variety of thematic, rhythmic and harmonic model structures. This knowledge, in combination with the technical and theoretical knowledge, determines the musician's range of variation. In addition to this knowledge base, which we have denoted as long-term memory M, the dispositions and intentions (e.g., feelings and motifs) of the musician as well as his or her personality traits (e.g., persistence, endurance, determination) define the overall character of the improvisation (Andreas, 1997, pp. 508-510; Vitouch, 2005, p. 670). With growing practice in improvising, this knowledge base increases (Sloboda, 2002). In addition to that and the necessary rudimentary technical skills (e.g., playing in rhythm), the skill of being able to hear, conceive and manage expressive qualities – called musical intelligence – is clear (Alperson, 2010, p. 275). Musical intelligence includes properties such as adaptability, fluency, flexibility and expressiveness (Pressing, 1988, p. 135). Only this intelligence enables the improviser to create E_{i+1} based on $\left(\{E\}, R, \Gamma, M\right)_i$.

The starting point of improvisation is the arrangement (Figure 2), which includes determinations before playing the piece of music. For a composition, the arrangement has been firmly fixed in writing in the form of notes. Within the scope of improvisation, the requirements are less firmly fixed and other forms of communication – body language or graphic characters – are also possible (Viera, 1992, pp. 70-71). Beyond this arrangement, the improvising musician needs a target for the improvisation that he or she can specify, but which he or she has to anticipate and follow. *"There are still a few die-hards who believe… there is such a thing as unadulterated improvisation without any preparation or anticipation. It is my firm belief that there has never anybody who has blown even two bars worth listening to person who doesn't have some idea about what he is going to play before he starts..."* (Duke Ellington in Sikora, 2003, p. 472). We have denoted these as the set of goals Γ.



Source: Own illustration based on Andreas (1997, p. 508) and on Kingscott and Durrant (2010, p. 132).

Fig. 2. Determinants of musical improvisation

Of outstanding importance for an improvisation is the context, which determines the reaction to outside events. We have denoted this as reference *R*. The improvising musician is forced to be oriented towards the framework conditions and to correspond them. In planned improvisations or sessions, which are performed for the improvisation's own sake, the musician knows ex ante what, when and for how long he or she can improvise. However, the context is a completely different one if a church organist must adapt

his or her playing to the developing church service that he or she has to accompany. The organist has to improvise within a narrow framework at certain points in the liturgy and has to bear in mind a wide range of aspects, from tempo, key and musical language to the needs of the congregation and the constraints of the church setting (Kingscott and Durrant, 2010, p. 131). "*Between these elements the organist now often helplessly swings back and forth by soon introducing or leading over, performing interludes and postludes and often is busy with bridging "dead spots", i.e., to avoid every moment of real silence*" (Bresgen, 1983, p. 23, emphasis in the original). The reactions of the audience or the development of the action to be accompanied (e.g., in church) are recognised and taken into consideration in the further playing (Bailey, 1992, pp. 29-30).

The musician prepares for the improvisation by repeating certain phrases and structures and by anticipating the basic structure of the performance (Sikora, 2003, pp. 472-473; Berliner, 1994, pp. 63-67; Bernstein and Barrett, 2011, p. 61). He/she applies methods – series of event clusters – that have led to a successful problem solution in previous performances. To be able to improvise well, a training of several years is usually necessary. Thus, the idea implied by the association of improvisation with an off-the-cuff action for which no long preparation period is required is severely put into perspective.

The previous explanations illustrate the following: improvisation is a goal-oriented, systematic process that is marked by simultaneous conception, realization and feedback. For a successful improvisation, a wide, issue-specific knowledge base is required, which can only be acquired through long-term learning. The character and objectives of music and organisation theory are different by nature. From that fact, the question results of whether a comparison of improvisation from these fields is admissible. This question is answered in the following paragraph.

2.3. Comparability of the simultaneous conception and realization of musical actions and of decisions within economic problem solving. The aim of improvisation in the field of music is the performance of a piece of music of a certain quality to be considered as good. Moral concepts are bound to the arts, which challenge judgements and estimations. These, in turn, depend on value criteria that have emerged based on traditional works. Listeners judge music based on association sequences they have acquired during their life course, which are characterised by different influencing factors. Taste itself is a testimony for the inconstancy of human things and the relativity of human values. By listeners with different association sequences, the same music is rated as more or less pleasant or good. Thus, it becomes clear that the value measures for a good or rather successful improvisation are of subjective nature. Owing to the learnt value criteria of the listeners of a cultural circle, these criteria are objective in that sense that consent about the quality of improvisation can be reached within this cultural group (Sikora, 2003, pp. 298-304; Philipp, 2003, p. 552).

The goal of the planning and realization of decisions within an organization is the problem solution. By defining the listeners of a musician as stakeholders and the satisfaction of the same as the target, parallels to organizations become apparent. The possibilities of listeners, however, to control the musician and to influence his or her performance process are limited. Furthermore, the classification of listeners as stakeholders is unsatisfactory because for all musicians and occasions for improvisation, with relation to the situation, a classification as an interest group is possible as well. Under these circumstances, a theoretical comparability between improvisation in music and in organization theory can be established. In both fields, a measure is simultaneously conceptualized and realized and in the course of continuation the current results are integrated into the further course by simultaneous feedback. Here, it is insignificant which musical genre is used for comparison purposes; it can be an individual improvization in jazz or in classical music (see the cited example of the church organist). These parallels are, while being conscious of the difficulties of the justification context, considered as sufficient for the following conceptual analysis. Analogy limits the result of the discussed different objectives between arts and organization theory.

3. The understanding and determinants of improvisations within the company

3.1. Improvisation's contribution to economic problem solving. For further characterization, improvisation is defined as an information-processing structure and a future-oriented problem-solving ability, with:

- the conception and realization of the measure taking place simultaneously;
- the realization of the measure starts without a complete anticipative reflection of the alternatives and their consequences;
- the interim results of the realization are taken into account for the further problem solution by simultaneous feedback.

This definition refers to the small period of time between conception, realization and feedback, but specifically does not converge reflection and action,

which is included in other definitions, as the conception of problem-solving measures can take place without reflection as well (Silva, 2011, p. 41). Reflection on alternative solutions and their consequences at the beginning of the realization phase has happened not at all or only incompletely. The incompleteness of reflection is possible with regard to the choice or effects of the alternatives, i.e., either not all available alternatives are considered or the realization of the problem solution is started before reflecting on the consequences of the chosen alternative up to the contribution to the result they would finally make. The result of this approach is simultaneous decision making and realization.

It becomes apparent that a comparison of alternatives, "planning" on the one hand and "improvisation" on the other hand, is only consistent when not only planning but also the following realization is compared with improvisation. Improvisation is a unit of immediate decision making and realization. Thus, not only the plan as a result of planning, but also its realization has to be integrated into the comparison. An exclusive consideration of planning and its result, namely the plan, inevitably leads to the finding that planning tends to be superior in comparison with improvization. This is because the feasibility of the plan has not been proven and no results of the plan realization are yet available, whereas in the case of improvisation, the results are immediately available and can be assessed.

The consideration of planning limits (Figure 1) shows that we can distinguish between foreseen and unforeseen improvisation. Foreseen improvisation is characterised by the fact that the cost-benefit relationship of the alternative "planning and realization" carried out ex ante leads to the finding of the advantageousness of the decision alternative "improvisation". That is often the case with limited problems of low complexity or that lack planning capacity. **Every plan** includes **improvisatory elements**, which occur because of the cost-benefit relation in the planning's degree of detail. In addition to foreseen improvisation, there is unforeseen improvisation in which the problem constellation appears as an ex-post surprise (Parker and Stern, 2008, pp. 143-144) and, thus, immediate problem solution can be realized. **Improvisation** remains in these cases as the **only available way** of problem solving.

It becomes apparent, that improvisation as an alternative to problem solving is, therefore, not only necessary in situations of high dynamics, uncertainty and complexity (situations that have process-dimensioned planning boundaries), but also, for reasons of economy or capacity, in other situations (situations that have subject-/object- or company-dimensioned planning boundaries).

The positive impacts of improvisation on problem solving in firms have been highlighted in several studies. It has been pointed out that improvisation plays an important, irreplaceable role in situations that have a high degree of uncertainty, e.g. in:

- a situation, which requires real-time decisions, e.g. a crisis situation (Mendonça and Wallace, 2007; Stein, 2011; Dearstyne, 2007; Strickland, 2011; 't Hart and Rosenthal, 2008, p. 254);
- product development and innovation processes (Kyriakopoulos, 2011; Moorman and Miner, 1998; Akgün, Byrne, Lynn and Keskin, 2007; Lindahl, 2007; Vera and Crossan, 2005);
- negotiations (Balachandra, Bordone, Menkel-Meadow, Ringstrom, Sarath, 2005; McGinn and Keros, 2002);
- the foundation process of an enterprise (Hmieleski and Corbett, 2006; Baker, Miner, Eesley, 2003);
- organizational learning (Chelariu, Johnston and Young, 2002; Miner, Bassoff and Moormann, 2001; Vendelø, 2009); and
- strategic decisions (Kawai, 2005; Cunha, Cunha and Clegg, 2009; Papadakis, Kaloghirou and Iatrelli, 1999; Dennis and Macaulay, 2007; Crossan and Hurst, 2006).

Planning and improvisation require and complement each other. Improvisation without planning is as bad as planning without improvisation. Problem solving in firms is carried out in the continuum between total planning and total improvisation (Brady, 2011, p. 45). It becomes apparent, on the one hand, that planning requires improvisation, to:

- solve problems in the case of insufficient planning capacities;
- solve problems in cases of unforeseen emergencies;
- solve problems in an efficient way; and
- create planning-related knowledge.

Improvisation is a legitimate way of decision making and problem solving. On the other hand, it requires planning, to:

- deliver aims and structure for improvisation; and
- generate the necessary knowledge for improvisation.

The limit between these poles is rather sketchy because it is hard to ascertain what leads to the distinction between different improvisation degrees. Therefore, improvisation can be looked as both a positive and a negative process depending on the context (Silva, 2011, p. 41). Improvisation in firms may include

different proportions of unscripted action as well as different degrees of irreversibility and/or innovativeness (Baker, Miner, Eesley, 2003, p. 259; Vera and Rodriguez-Lopez, 2007, pp. 305-306). The question is not whether improvisational practices can be construed as a new paradigm (Leybourne, 2007, p. 235).

Based on the definition and determinants of improvisation in music, these factors of the behavior of individuals in organizations will be examined in the following section.

3.2. Actor-problem relation. The characteristics of the individual and also of the problem influence the problem solution by improvisation. In the following section, the factors norms, attitudes, qualifications, motivation and emotions are classified as relevant for consideration, as they determine the individual's behavior. The norms and attitudes of an individual shape the perception of the environment, the options for action and the consequences of action. Attitudes are, as well as values, learnt. In the context of improvisation in a company, how the valuation of and attitude towards a problem solution differ from planning is relevant. Improvisation is marked by a less content-related and also temporal structure compared with planning. For that reason, the attitude of the actor towards this structure and thus towards the problem solution form of improvisation is important. Since norms and attitudes are learnt, the valuation of and attitude towards improvisation depends on national cultural norms as well as those of the company and on the personal experience of the individual (Aram and Walochik, 1996, pp. 78-80; Bernstein and Barrett, 2011, p. 61). It can be shown empirically that improvisation training increases both the occurrence and the quality of improvisation because, besides the training, the attitudes of the individuals towards improvisation have also changed (Vera and Crossan, 2005, pp. 216-218).

Apart from norms and attitudes, the qualifications and experiences of the actor are relevant for the problem-solving behavior. This issue has also been determined within the scope of the analysis of musical improvisation as part of long-term memory *M*. Qualifications in firms consist of abilities, skills and knowledge and they can be distinguished between functional (e.g., technical, process-related qualifications) and extra-functional (e.g., flexibility, willingness to assume responsibility, creativity) qualifications. The functional qualifications of the improvising musician consist, for example, of the knowledge of different musical styles and the motor skill to make music, whereas the functional qualifications of the actor in a company, in addition to abilities and skills, for example, consist of the knowledge about the company itself as well as about the sector and cultural area. A wide knowledge base characterises both successful musical improvisation and successful improvisation within a company. Only in those areas in which extensive specific knowledge is available can improvised decision making be successful in the long term (Webber, Morgan and Dickson, 1999, p. 51).

Both in music and companies, extra-functional qualifications play a major role in successful improvisation. The ability to react flexibly to unexpected situations, the ability to, on the basis of the available means (i.e., resources in a company), master beat combinations in music (i.e., to solve the problem or to continue the piece of music) and the ability to quickly digest information all determine the quality of improvisation (Crossan and Hurst, 2006, p. 289; Bernstein and Barrett, 2011, pp. 72-73). Among extra-functional abilities is creativity, such as the skill of the musician as well as of the actor in a company, to use available resources in an innovative way and thus to solve the problem.

The personality of the individual represents another influencing factor of improvisation both in music and in a company. The definition and recognition of personality has not definitely been clarified in the field of psychology and thus there are several approaches. For this discussion, personality is described by those traits of a person that constitute a consistent behavioral pattern. Related to improvisation in a company, such personality traits that are of interest are those that facilitate the conception as well as realization of the improvised problem solution. To these belong traits such as persistence, unconventionality, emotional stability and self-efficacy. Self-efficacy is not concerned with the skills of an actor, but rather the judgement of what the actor can do with these skills. A strong sense of efficacy may foster an overall confidence and lead to a more effective decision process (Sayegh, Anthony and Perrewé, 2004, p. 188). This list is not regarded as exhaustive, but as sufficient to consider traits of people, which exceed values, attitudes and qualifications, as relevant for the success of improvisation within a company.

These explanations make it clear that individuals, despite their identical experience levels and knowledge bases, are not able to improvise equally well because, besides functional, extra-functional qualifications are also relevant. During improvisation, a new order of mind, body and environment emerges and the world is reconfigured (Ciborra, 1999, p. 87).

In addition, the influence of the motivation and emotions of the individual during improvisation must be examined, as these have been defined as influencing factors of improvisation in music (Figure 2). The direction, duration and intensity of the behavior are summarized as motivation. A crucial basis for successful improvisation is the willingness to forego planning (Crossan and Hurst, 2006, p. 289). The motivation for

and during improvisation also represents a determining factor in a company (Crossan and Sorrenti, 1997, p. 174). If the individual is not motivated to solve the problem through improvisation, improvisation quality will be influenced, too. Emotions are also an issue for the behavior of the individual and thus for improvisation in a company (Maitlis and Ozcelik, 2004, pp. 376-377). Currently, however, it is not possible to determine which emotions influence improvisation in which directions. An important role in this connection plays the emotional memory. This memory allows individuals to learn from their mistakes. Every experienced emotion has its own memory and this is triggered in similar circumstances in order to guide the actor in situations that need a quick response (Sayegh, Anthony and Perrewé 2004, pp. 188-189).

3.3. Orientation of the actor and recursive problem solving. The environment of the individual is characterized by the problem to be solved itself and furthermore by the intra- and extra-organizational environment in which the problem is embedded. In addition to the problem, the perception of the same problem and also the perception of and the orientation by the intra- and extra-organizational environment affects the problem solution. Therefore, the improvising musician has to recognize, to interpret and to consider for the further course the reaction of the audience, his or her own playing and the improvisation context (Figure 2). From this, we denote it as reference *R*, for the improvising actor in a company follows that he or she always has to orientate him- or herself by the internal and external stakeholders in order to simultaneously include their reactions into the problem solution and, therefore, to provide the basis for further problem-solving steps.

As an example of successful orientation and thus the correct perception of the intra- and extra-organizational environment during an improvised problem solution, the approach of the company Johnson & Johnson can be referred to. In the Chicago area, some people died after taking medicine capsules named "Tylenol" that had been poisoned in 1982. In response to the incident as well the public perception and discussion, the production and distribution of the product were stopped. After the reason had been identified, the stakeholders and their reactions were integrated into the problem solution in such a way that an exceedingly successful relaunch of the medicine with new product packing was possible (Fearn-Banks, 1996, pp. 102-111; Lagadec, 1993, pp. 272-276). The central point of this improvisation unquestionably was the consequent alignment of the problem solution towards the reactions of stakeholders. The perception of and orientation towards the reactions of extra- and intra-organizational stakeholders during the improvisation has not been considered in the available articles on improvisation, but it represents an essential influencing factor for improvisation quality. Only this orientation ensures that the actor moves within an admissible problem solution area and that the actor immediately notes when this area has been left.

The extra-organizational environment is characterised by a certain degree of complexity and uncertainty as well as a rapidity of changes, by which the decision problem and/or existing options for action and periods of time are defined. This degree determines both the necessity for improvisation because of fundamental planning boundaries and the possibility for improvisation because of subject-/object-dimensioned planning limits. Moreover, this degree determines the probability of improvisation success. Problems within less complex, more static environments tend to be more successfully solved by improvisation than do problems within complex, dynamic environments (Weick, 1998, pp. 552-553). This is a dilemma, because improvisation in companies is classified as an element of problem-solving competency, which is more important the more dynamic the competitive environment is and the more information risks exist. Therefore, the probability of the success of improvisation in uncertain, complex and dynamic systems also depends on the qualifications of the actor. If the actor can learn to deal with such situations (i.e. expertise exists), the probability of success is higher (Klein, 1998, pp. 153-154).

Significant for improvisation is the fact that previous problem-solving steps represent the starting point for further solution possibilities. This recursive behavior is oriented towards the results of the action so far and also towards the currently available resources. Because of a lack of time, the actor cannot develop or acquire new problem-specific resources, but is forced to examine existing resources with regard to suitability for solving the current problem (Crossan and Hurst, 2006, p. 289; Kyriakopoulos, 2011, p. 1057 and for the case of Apollo 13 see Stein, 2011, pp. 22-23). The actor has to perceive the intra-organizational environment with reference to the problem solution. As an example, the failed Elktest of the Mercedes A-class in 1997 can be used, in which the installation of a stabilization system that had existed in the company, but had not been taken into consideration so far, served as the problem solution, which turned out to be a competitive advantage in the long-term (Seymour and Moore, 2000, pp. 129-130).

3.4. Action-guiding system. The action-guiding system consists of national culture, the superior company framework (e.g. long-term targets, strategic orientation

and firm history) and the intra-organizational environment, which is described by organizational culture, management tools and organizational rules. National culture can be described and classified using the following dimensions that were established by Hofstede: power distance, uncertainty avoidance, individualism, masculinity and long-term orientation (Mead, 1994, pp. 64-76; Thomas, 2008, pp. 49-53).

For further discussion, only the dimensions of uncertainty avoidance and individualism are of interest. Every improvisation is joined with a high degree of uncertainty. Hence, it can be assumed that in cultures with a high degree of uncertainty avoidance (Jain and Tuckert, 1995, pp. 26-27), the attitude towards improvisation is rather negative. In addition, it has to be stated that because of the nature of improvisation as a real-time conception and realization of the problem-solving measure (cf. p. 107), it is impossible to realize a consensus in decision-making. Therefore, we would expect a positive attitude towards improvisation in individualistic cultures.

The less detailed the instructions for specific problems are, the greater is the influence of subordinated goals and the values of the company. Clearly defined and communicated moral values and management principles ensure that the actor moves within an admissible solution area. Furthermore, implicit quality standards in the form of internal models facilitate the problem solution for the improvising actor.

Another characteristic of entrepreneurial improvisation is the fast feedback as a basis of error correction. Fast information on admissibility and the success of the improvised measures allow us to continue with these and also make the necessary error corrections. The actor must be able to receive information on the quality of the previous improvised solution steps quickly. Based on this, further solution sequences can be prepared. The more real-time information is available in the company, the higher the probability of success of the improvisation (Dearstyne, 2007, pp. 36-39 and the empirical study by Moorman and Miner, 1998, p. 13 as well as in the theoretical analysis by Chelariu, Johnston and Young, 2002, p. 143).

Improvisation requires the freedom and time to realise and learn improvisation. Thus, improvisation is rather successful in a company culture that offers its employees the respective freedom for improvisation (Vera and Crossan, 2005, p. 208). That becomes possible through flexible organizational structures and flat hierarchies as well as through flexible target agreements and budgeting guidelines.

The constructive integration of former mistakes into the further problem solution is influenced by the interpretation of discrepancies as a source of learning. In this way, the actor can use the problem-solving steps constructively, which had, up to that moment, been rated as incorrect, for the further problem solution, so that the resulting overall problem solution is considered to be successful from a retrospective view (Barrett, 1998, p. 610). An example of this is the development and successful launch of "Post-it" notes by 3M, which resulted from a failed product development (Crossan and Sorrenti, 1997, p. 162). From the retrospective view of the whole problem solution sequence, these projects are successful, whereas, at an earlier time of consideration, merely faulty solution steps were identified.

Therefore, as a determinant of improvisation in a company, the superior framework, the set of goals Γ, should be noted in which the content-related and temporal general guidelines of improvisation should be defined. Owing to this subordinated process, the improvising actor is forced to reach certain interim goals. In firms, the minimal structure of improvisation has to be supported and guided by controls (e.g., working rules, milestones, deadlines, well-defined strategic priorities) to combine autonomy and order successfully (Vera and Rodriguez-Lopez, 2007, p. 307). In this way, the direction and evaluation of improvisation is facilitated for the actor. The shorter the temporal distances and the clearer the content-related goals, the easier it is to improvise. The actor must be able to interpret these minimal organizational structures constructively for further problem solutions (Crossan and Hurst 2006, p. 289). Examples of the development of frameworks for improvisation based on information risks are issue management and crisis management, which aim at the development of rough objectives and procedural steps for emergencies (Somers, 2009, p. 16; Mendonça, 2007, pp. 958-964).

As an actual example of an unsuccessful improvisation, the case of the Tokyo Electric Power Company (Tepco) is highlighted (for a detailed study, see Strickland, 2011). As a consequence of the tsunami on the Japanese east coast in March 2011, the nuclear power plant Fukushima I suffered a cascade of technical failures, which led to a nuclear disaster rated 7 on the International Nuclear Event Scale. The combination of natural disaster and technical failure led to an unforeseeable disaster, which allowed only one way of reaction – improvisation – as a key ingredient of effective crisis management (Brady, 2011, p. 29). However, the improvisation of Tepco has to be classified as unsuccessful for the following reasons:

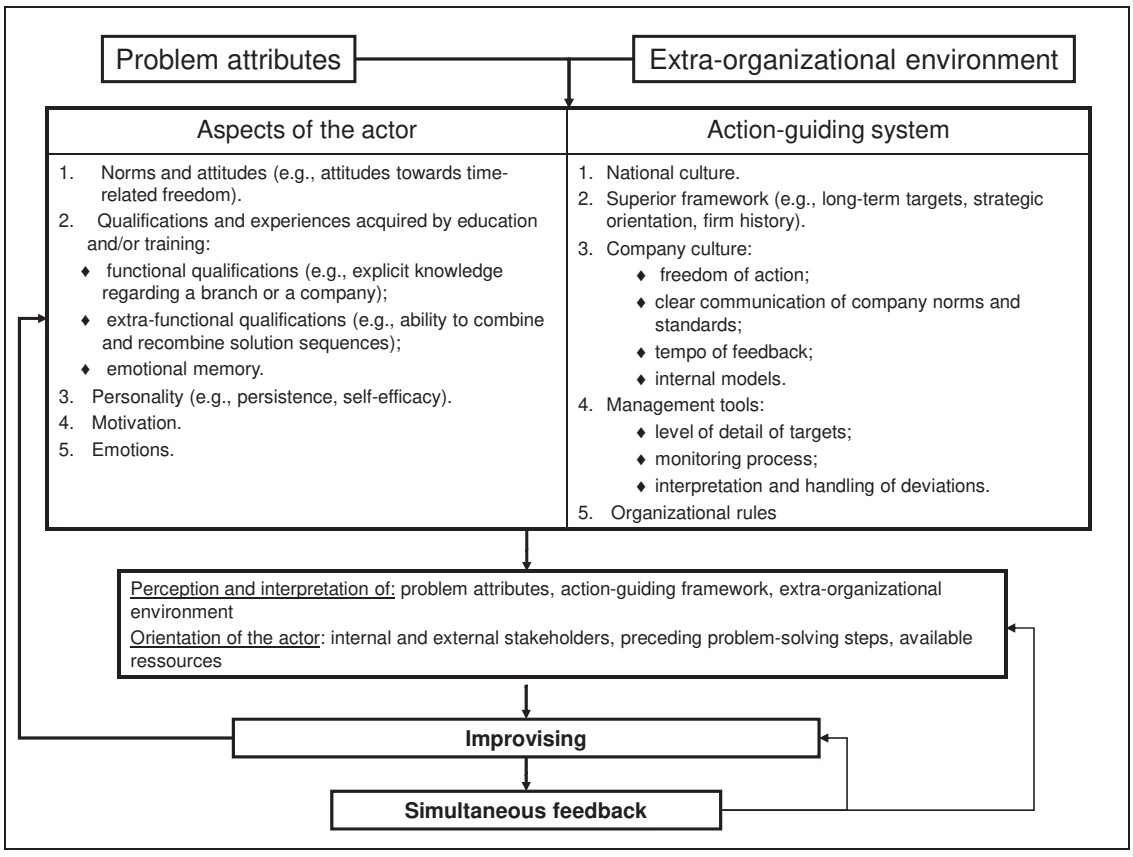
1. The decision-makers were technical experts, but they were not trained for such a situation, namely they were novices in improvisation. The central question is if it is in general possible to train someone for such a situation. The answer is that it is possible to train similar situations in order

to be prepared for the necessary improvisation (Mendonça, 2007, pp. 953-957; Roux-Dufort and Vidaillet, 2003, pp. 104-110).

2. The action-guiding system of the company – especially Japanese national and organizational culture – did not offer the freedom and time that would have been necessary to learn improvization in the years before and to realize the improvisation now (in 2011). Japanese culture is rather a collectivistic culture with a high degree of uncertainty avoidance (Thomas, 2008, p. 51). These factors have a rather negative influence on improvization, as mentioned above (cf. p. 112). Moreover, Japanese culture is characterized by consensus decision making (Earley and Laubach, 2002, p. 266) and by the whole group assuming responsibility for the errors of one of its members (*rentai sekini*) (Sugimoto, 2005, p. 273; Hendry, 2006, p. 251). Hence, the perception of mistakes in Japanese culture impedes their constructive integration into the further problem solution.
3. The company provided no, weak, differing, confusing and, at times, contradictory information and thus it completely lost the orientation in the extra-organizational environment.
4. In addition, only few suitable technical resources were available and the actors were unable to combine and/or reconfigure these available resources in a successful way.

Conclusion

The consideration of musical improvisation facilitates, taking into account the analogy boundaries of music and organization theory, the definition and systematic characterization of the determinants of improvised problem solutions in companies. The characterization of the improvisation process (Figure 3), known from the field of music, is transferred to the determinants of entrepreneurial improvisation and extended following the explanations so far. Therefore, improvisation quality is defined by the actor-problem relation, the superior framework, the orientation and aspects of the actor, the characteristics of the extra-organizational environment and the action-guiding system.



Source: Own representation, based on Andreas (1997, p. 508) and on Sayegh, Anthony and Perrewé (2004, p. 185)

Fig. 3. Determinants of improvisation in organizations

These elaborations illustrate the difficulties of the observation, description and targeted use as well as the limits of improvisation in a company. The foregoing discussion is restricted to the decision-making and realization of individual actors in a company. Group decisions or improvisations are, because of their complexity, suitable for further discussion. This, however, could not be realized within the scope of this article. The present theory-based approach is owing to the early stage of discussion and development of the topic, but it offers starting points for empirical research.

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