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Fritz Böhle, Karin Orle, Jost Wagner

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Chapter 3
Innovation Work: Artistic, Experience-Based, Playful

Fritz Böhle, Karin Orle, and Jost Wagner

The discussion concerning how to create and promote innovation has dealt either with personal traits that promote innovation, particularly creativity or the organization of innovation processes. However, the fact that innovation is the result of human action and is highly dependent on work within innovation processes is often overlooked in this respect. Innovation work has special characteristics that differ from other work and must be considered when managing innovations. Not only innovation research, but also work research have both hardly considered these special characteristics of innovation work to date. This chapter will present research approaches to innovation work and continue by describing the necessity for artistic, experience-based and playful action in innovation work.

3.1 What Is Innovation Work?

If one approaches a company and asks which employees deal with innovations, one is generally referred to the research and development departments. Particularly the work of engineers appears to be typical for innovation work. To the extent work research has dealt with the work of engineers to date, it is primarily concentrated on

F. Böhle (✉)
Sozioökonomie der Arbeits- und Berufswelt, Philosophisch-Sozialwissenschaftliche Fakultät, Universität Augsburg, Eichleitnerstraße 30, 86159 Augsburg, Germany
e-mail: fritz.boehle@phil.uni-augsburg.de

K. Orle
eo ipso Konzept, Talangerstraße 7, 82152 Krailling-München, Germany
e-mail: k.orle@eo-ipso.com

J. Wagner
GAB München – Gesellschaft für Ausbildungsforschung und Berufsentwicklung, Lindwurmstraße 41/43, 80337 München, Germany
e-mail: Jost.Wagner@gab-muenchen.de

answering the question as to how it is or can be mechanized and rationalized similar to production work (e.g. Wolf et al. 1992). The work of engineers in this respect is considered to fulfill a prototype function when it comes to intellectual work, where intellectual work is primarily associated with planned, rational work practices.[1]

Theoretical models and guidelines for methodical approaches in development and construction work in the engineering sciences are also oriented with linear work steps, which are planned ex ante and occur in sequence (cf. Ehrlenspiel 2009, p. 252). According to which, the development process is "considered an 'optimization process', which can be methodically defined, between fixed requirements and technical solutions" (Rogalla 2011, p. 192). In contrast, however, studies are also conducted, which extend and modify this understanding of innovation work as engineering work in multiple respects in terms of the domain of validity, requirements and type of work activities.

3.1.1 Scope of Application

Studies in the field of mechanical engineering indicate that not only engineers, but also skilled workers contribute to producing a technical development. Innovation work is therefore not restricted to research and development departments, but also takes place when building prototypes up to and including further development and improvement of existing products and processes (Kowol 1993; Asdonk et al. 1993). This is associated with an understanding of innovation work, which on the whole concerns "further developments, modifications and detailed changes to existing procedures and processes" (Kowol 1993, p. 119). Investigations on the development of work with increasing automatization also come to the conclusion that with respect to monitoring and regulation of complex technical systems, work in production becomes "a necessary basis for permanent process and product innovation" (Hoß 1989, p. 35). Finally, it was shown in research on the humanization of work that even unskilled workers are capable of developing new forms of work organization and measures for improving working conditions (cf. Fricke 2009). However, one must differentiate in this respect between diverging from prescribed rules on one hand and developing one's own procedures within the work process and, on the other hand, modifying an "existing practical context", which goes beyond one's "own sphere of responsibility" (Moldaschl 2007, p. 139). The former is particularly necessary if unforeseeable imponderabilities occur in technical and organizational processes. Handling imponderabilities is a crucial, but often underestimated task of human work with the increasing automatization and complexity of organizations (Böhle et al. 2004). If, however, one refers to this as innovation work, the term loses its selectivity and becomes a synonym for nearly any work.[2] The introduction of

[1] For a general understanding of work as planned-rational work action, refer to Böhle (2010).

[2] In this perspective, refer to Böhle (2010) for further general elaboration of the concept of work action.

new, as yet unknown aspects, which goes beyond the current situation and one's own work practices and is usable, is in contrast a special form of work, which can be referred to as innovation work[3] and differs from other work, which primarily concerns the application and assurance of known procedures and results.[4] Even if one uses this more precise definition of innovation work as a basis, it has been shown that innovation work does not only take place in research and development departments, but also in production and other departments.[5] This is especially the case if, in addition to product innovations, process innovations and/or technical and social innovations are considered (cf. Brockhoff 1999; Howaldt and Jacobsen 2010). This also involves that innovation work not only takes place in the scope of activities, which have been explicitly assigned within the company organization with the task of discovering changes and new aspects – from research and development up to and including special project groups in the scope of change management or continual improvement processes (CIP).[6] Innovation work occurs in different work processes and can be an essential constituent of work and can also be performed in addition to other work tasks and content. On one hand, this means that employees in production and other departments also perform innovation work and on the other hand, that research and development departments do not exclusively perform innovation work, but also other work such as documentation and the application of previously tested methods.

3.1.2 Requirements

In all studies investigating the special aspects of innovation work in comparison to other work, uncertainty, openness and inability to be planned of the work requirements and the result of the work are determined as significant characteristic. In addition to these general characteristics, special reference is made to the fact that not only the requirements are indeterminate and uncertain, but that creation of new ideas can also not be planned. Decisive approaches and potential solutions often "occur" to their developers "at home" and not at work. Only once removed from the everyday work environment, are they relaxed and concentrated enough to develop ideas to maturity and think through their feasibility and soundness

[3] In this context, Moldaschl differentiates between "innovative action" and "innovational action" and considers innovational action as a characteristic of innovation work (Moldaschl 2007, p. 139).

[4] Even if imponderabilities occur in this case and managing unplanned aspects is a primary task, the goal and result, which the work endeavors, are known in the end.

[5] Cf. detailed information in Chap. 7.

[6] Moldaschl proposes only relating innovation work to the "firm, systematic and prioritized" achievement of innovative results (Moldaschl 2007, p. 138). As a result, however, contributions to innovations in work areas and employees, who are not "primarily" occupied with innovative work, but participate in addition to their other work, are excluded a priori.

(Bolte 2000, p. 114 et seq.). Solutions, which are developed, turn out to be stable for a limited time only in practice. They may "suddenly and unexpectedly" capsize, consequently require recurrent revision and must be adapted to varying influential factors such as environmental conditions, materials, production methods etc. (at the place cited, p. 142).[7] Uncertainty and limits in planning innovation processes overall are therefore particularly characteristic for innovation work (cf. Moldaschl 2007).

3.1.3 Work Action

Due to the indefiniteness and uncertainties of the work requirements and results for innovation work, it differs from planned rational action. As a result, the value and necessity of special knowledge based on experience in addition to scientifically substantiated expertise of engineers and skilled workers in production have been found to be important in studies (Bolte 2000; Hoß 1989). This concerns not only special knowledge, but also special work practices and skills such as: responding to "unknown situations with one's five senses in a non-systematic, associative and discontinuous manner and/or planning for unknown aspects and putting creativity to practice" (Hoß 1989, p. 35); or experiencing the practical application and use of technical developments "oneself" (Bolte 2000, p. 116 et seq.). Such research approaches are also present in the engineering sciences and other disciplines, where particularly development and construction are not only described according to the model of planned-rational action. In this respect, the following is stated in analyses of the actual course of construction processes: "Successful and methodically trained design engineers also do not strictly follow plans, but need to skip steps or backtrack in order to make more holistic progress in developing solutions" (Pahl 1998, p. 9). Non-conceptual, imagery-based thinking, intuition and knowledge based on experience are described as essential elements of construction action in this respect (Ferguson 1992; Petroski 1985; Vincenti 1990) and "experience-based points of access and playful-heuristic method" in comparison to "clarified algorithms (. . .) [are] often [cited] as superior" (Heymann and Wengenroth 2001, p. 116). The proximity of developing and constructing to art is not only apparent in the historic development (König 1999; Krohn 1977, p. 49), but also appears to be important at present. The concept of innovation work outlined below carries on with this idea.

[7] Indefiniteness and uncertainty result for example in product development for mechanical engineering as the result of unforeseeable effects of the processed material on machines, despite the use of simulation technology; the operational environment (dirt, temperature, etc.); the use of specific machinery; instabilities in production processes etc. (Bolte 2000, p. 141).

3.2 Work Action in Innovation Work: Outline of a Concept

It has been shown that innovation work can be generally defined as work oriented towards achieving new, yet unknown, results that have usable effects that go beyond the current situation. It may be a core element in specific work processes or also occur as a complement to other work. Furthermore, in light of the indefiniteness, uncertainties and limits encountered when planning innovation processes, the fact that innovation work is also particularly characterized by indefiniteness and uncertainties both in terms of work requirements and their management is hardly disputed. Finally, more recent approaches to research indicate that innovation work is not, as originally presumed, the prototype of intellectual, planned, rational action and can neither be described nor designed in a practical respect according to this model. A systematic definition of the special characteristics of work action as part of innovation work and as a result the manner in which work is performed has only been provided in a preliminary form to date.[8] A complex action model will be presented below, which can be applied to identify special characteristics of innovation work in contrast to other work. With this model, we differentiate according to three fundamental elements of human action: the subjective attitude, according to which one acts, the manner in which one acts on a practical level and the definition of the situation in which one acts. These elements of action will first be explained using the model of planned-rational action. Then, the unique character of these elements will be explained with innovation work in contrast to planned-rational action.

Subjective attitude: Weber differentiates, with respect to his typology of action, between instrumental-rational, emotional and traditional action (Weber 1956, p. 17 et seq.). Although not explicitly stated, various assumptions on subjective disposition and attitude of the acting party are based on this distinction. Instrumental-rational action requires that the acting person interacts with the world in a conscious and rational manner. Contrary to emotional action, such a person is compelled to act neither directly by requirements nor stimuli from the surrounding environment. Instead he or she reflects and considers means and goals in a rational manner. Unlike traditional action, such a person is not driven by established habits, but instead makes conscious decisions on how to act and demonstrates independence. In sociological

[8] The modification of the Theory of Action Regulation performed by Hacker warrants mention in this case. It was originally oriented with the model of planned-rational action. Upon inspection of work in research and development, however, this approach exhibited fundamental limitations as it assumes that the goals of work action are defined before practical execution. On the other hand, investigations of the work in development concluded that this merely concerns "a systematic decomposition of a global task into sub-tasks and an overall target into sub-targets" (Hacker 2003, p. 11). Hacker describes the development work as a continual, reciprocal error correction process, where hypothetical-intuitive design steps and their evaluation alternate. In most cases, targets are not specific at the beginning of the development process, for which reason the iterative development of targets is itself a constituent of the constructive process (cf. Hacker 2010). The concept outlined below continues with this and elaborates Hacker's description.

theory, autonomous action is associated both with responsibility for one's self as well as knowledge and control of the conditions of action (Parsons 1980; Bonß 2010).

The understanding of work as planned rational action also makes such assumptions about the subjective attitude of the person performing work. Particularly in the case of industrial work, knowledge and control of the surrounding environment relates to "controlling the natural world" and therefore requires an attitude geared towards subjecting the surrounding environment to one's own goals and plans as well as controlling and manipulating the same.

Such an attitude towards the surrounding environment is, however, only suitable to a very limited extent when it comes to promoting innovations. The indefiniteness and uncertainty of innovation work require a different subjective disposition and attitude. To use some key words, one could refer to it as being open to the unknown. In modern societies, it is particularly present in areas of life outside of economic activities, particularly in the arts. However, not only artistic work, but also innovation work in research and development up to and including production requires an "artistic attitude". This aspect of innovation work is described in greater detail in Sect. 3.3.

Method of action: Planned-rational action is based on the separation and sequential order of planning action and putting it into practice. Planning involves the analysis of potential actions and conditions as well as related decisions. The better the planning, the simpler the execution and implementation of action seems to be. Planning is also correspondingly considered a superior intellectual and in fact human task. The practical execution and implementation of action is considered less demanding in this respect; it merely represents the execution of planning and at best, serves to evaluate it. Decision-making and planning are based on intellectual-rational based perception and analysis as well as logical deductions. One's body and senses play a subordinate role in this respect.

With innovation work, neither the goals nor procedure, by which the innovation is brought about are determined and defined before practical action. Not only planning, but above all practical execution of action is necessary for innovation work in order to tap successful goals and methods. Information that cannot be precisely defined must also be observed in this process. It must be perceived with one's general feeling for things. Furthermore, other mental processes such as intellectual-logical thought must be permitted and used. Such divergences from planned-rational action can be systematically assessed as experienced-based subjectifying action. A procedure aimed at discovery and exploration in connection with perception based on one's general feeling for things are characteristic for this. This method of action has been observed in work research, particularly when managing imponderabilities in technical and organizational processes. It has shown itself to be a central element in innovation work in connection with an artistic attitude, where it receives considerable emphasis. This characteristic of innovation work is described further in Sect. 3.4.

Definition of the situation: Goffman pointed out that action always takes place within a natural or social framework, which influences it in addition to immediate conditions of action and goals (Goffman 1974). For specific work action, this states that it is determined not only by immediate work requirements and work conditions. The general cultural interpretation and anchoring of work on an institutional level are

also decisive. In modern societies, this includes for example the social differentiation and separation of gainful occupation versus other areas of life and the underlying task-oriented and instrumental nature of work associated with it. Work is also considered proof of one's individual performance and is subject to external controls and evaluations particularly in its institutional organization. It is therefore not only necessary for persons performing work to manage work requirements on a technical level, but also to assert themselves within the corporate system and on the labor market. Finally, work is also associated with seriousness, effort and social duty, also if it serves self-realization, which is especially apparent in the contractual regulation of the employment relationship. This social framework for employment, which continues to be considered normal, must be adjusted in a special manner for innovation work.

As already mentioned in the overview of approaches to research on innovation work, new ideas generally occur in practice when they are not consciously or strategically sought after. They tend to occur on an "incidental" basis. Often, there are also indications of a state of "flow", in which one's surroundings fail to interfere with the work process and are forgotten, or one is active in an "open space", where mandatory rules are not completely lacking, but provide a very limited guideline for actions. The framework of innovation work suggested here tends more to resemble a game than the prevailing social framework of work. This characteristic is described further in Sect. 3.5.

The elements of work action for innovation work outlined here concern the special nature and differences to other work. They will be described, substantiated and differentiated further below.

3.3 Subjective Artistic Attitude

The necessity to address the innovation process in a creative and artistic manner with the uncertainty and inability to plan associated with this process distinguishes innovation work in comparison to planned-rational work. If one is not aware of the end result when beginning work or whether any result at all will be achieved, that is, if managing the work process is not the instrument of choice as this tends to impair the development of innovative solutions instead of enabling it, another model of action and other attitude, on which action is based, is required. Artists belong to the professional group which is generally considered, from a societal perspective, to be very innovative and creative and for whom dealing with openness and aspects that cannot be planned is at the same time virtually inherent. If one wishes to understand which attitudes and forms of conduct are significant when it comes to innovation work, it is worth considering the activities of artists. After all, as Brater et al. (2011) pointed out in a recently published study[9]: Though results differ greatly and in

[9] This study was created in the context of the BMBF project "Dienstleistung als Kunst – Wege zu innovativer und professioneller Dienstleistungsarbeit" and builds on previous preliminary work on artistic action (cf. Brater et al. 1989, 1996).

consideration of the great diversity in the content of art, an artistic model for action can be described, which does not have a planned-rational character, but produces sustainable and above all, original results.

If one asks artists how they approach creating their work, certain elements of action are recurrent despite the wide range of individual differences, which are, among other things, defined by a specific attitude towards the process and object of action (cf. at the place cited):

- Artists do not address the open-ended situation requiring action by means of planning or defining goals etc., but by acting. This means that they begin acting without having any particular notion of the result or process. On the contrary, if they have such notions, they actively attempt to abandon them.
- However, artists associate a goal in the form of a very personal concern, a certain interest, an artistic query etc. with their action etc. The starting point for their action is therefore not (merely) an assignment given to them from an outside party, but an individual reason to take action without it being completely tangible.
- They immerse themselves in the process, alternating between actions and perceiving, and establish a dialog with the object or material by familiarizing themselves with it in a manner that appears to have "no purpose" and consciously respond to impulses resulting from the process (cf. Sects. 3.4 and 3.5).
- They allow their actions to be guided by impulses given by the subject matter, which is of interest to them and which they subjectively deem to be worth keeping and pursuing further without being able to objectively substantiate this.
- The artistic process generally tends to be prone to disruption and crisis: Crisis experiences are often an inherent constituent of the artistic process. Artists are often confronted with the challenge of not giving up and instead enduring the crisis and continuing to act while often abandoning ideas and trains of thought guiding the process and are therefore compelled to open themselves further.
- In taking an open approach, they often encounter a new impulse, idea, perspective, which also comes to the artist by surprise and which tends more to be stumbled upon by the artist than to have occurred to him or her. The artist then actively follows this impulse and strategically pursues whatever is manifesting itself. What was previously questionable is now suddenly evident. Artists report that openness "closes itself".

Acting innovatively, as one can learn from the example of artists in the case of innovation work, above all means adopting a specific attitude towards openness and the imponderability of the process. The tasks involve working not against, but approaching the innovation process with openness; this means that one does not confront the subject matter and process with an attitude of management and control, but actively observes openness and consciously looks for and creates it anywhere it does not prevail. Artists create openness by consciously setting constricting notions and considered goals aside in order to begin action in the most unbiased manner possible. After all, as the painter Gerhard Richter puts it: "I want to create something that is more interesting that anything I could think up" (Elger and Obrist 2008, p. 262).

Acting in an innovative manner therefore requires that one is ready to immerse oneself in an open-ended process without knowing exactly where this process will lead and what the end result, if any, will be. Innovations are often achieved in that one does not resort to conventional, established patterns of thought and action, but by consciously dispelling them and taking an open approach to new aspects. To do so, one must, however, also be ready to set aside readily apparent solutions and approaches, that is, the desire to quickly resolve the problem and instead do so in a new and original manner. Innovation not (only) requires that one be oriented with the apparent reality, which at first glance appears to be at hand on a factual level, but also the possibility of what is not (yet) at hand on a factual level. It therefore requires, as the writer Robert Musil puts it, a sense for what is possible – that is, the "ability (. . .) to conceive anything that is just as good and to not consider that what is as more important than what is not" (Musil 1970, p. 16). Consciously deciding to take an open approach and orienting oneself with that which is not yet allows for inspiration for new and innovative solutions in the process.

Innovation processes are furthermore, similar to artistic processes, often characterized by disruptions and crises. The conceived approach does not work as one expects, ideas for affecting a solution turn out to be unusable, attempts to find an answer end empty handed, financial and temporal resources become scarce etc. Innovation work is characterized by adopting a specific attitude towards such crises, which can also be observed with artists: Crises are not understood as indicators for the failure of the process, but as a source of inspiration, as the necessary destruction of disruptive patterns of thought and notions. The economist Joseph Schumpeter already spoke of "creative destruction" (cf. Schumpeter 1912)[10] in connection with innovations, which is initially responsible for new breakthroughs. The word "destruction" in this case implies a process step that is at first glance not "inspiring" in nature nor enjoyable, but painful. This therefore does not involve simply ignoring crises or redefining them. Facing crises by adopting an artistic attitude poses a more paradox demand on the acting party: engaging the crisis and associated discomfort and at the same time, not consequently losing oneself, letting go and at the same time sticking to it, disposing of established behavioral forms and yet continuing to act. Or, drawing on the words of Pablo Picasso: giving up the search and start finding instead.[11] In order to achieve innovative solutions, it is therefore necessary to "fail on a creative level", which effectively embodies the ambivalent nature of the issue.

[10] Whereupon Schumpeter describes creative destruction not as a starting point for innovation, but vice-versa innovation as an impetus for creative destruction, that is, the continual dissolution and recreation of market structures in capitalism. Finally, both aspects approach the same conclusion: One must first abandon existing aspects in a relatively radical manner in order to achieve new results.

[11] The following quote is attributed to Picasso: "I do not seek – I find. Seeking is when one comes from old things and encounters the familiar in the new. Finding is something entirely new, also in motion. All paths are open and whatever one finds is unknown" (cf. Gohr 2006).

In order for this to work, which one can also learn from artists, action must finally be internally linked to the reason for action by the acting party. Art has always dealt with the artist and his personal expression: Many art critics therefore do not vainly attempt to learn about the personality and biography of the artist in their interpretation of modern art. The same is true for innovative action: An outside reason or assignment does not suffice in order to create something new or innovative – one must have a personal interest, query to represent, something to both plague and drive the acting party. In this respect, neurobiological research in recent years has shown that creativity, learning and developing new, innovative patterns of thought are particularly evident when the acting party is emotionally attached to the learning material or objective and experiences feelings such as pleasure and enthusiasm or passion in the cognitive process (cf. Hüther 2011). Innovation work can therefore not be prescribed or forced, but is only successful if the acting party associates an inner, personal desire or interest in the work or company task, which he or she has taken on. As a result, innovations always express the personalities of their creators.

3.4 Method of Action: Experience-Based

Divergences from planned-rational action are considered inadequate and as mere "muddling through" and a product of lacking knowledge and ability, particularly in the area of work. However, this fails to consider that one can also act strategically in the event of an unplanned approach, which experts often take to solve problems. More recent research defines this as situational action (Suchman 2007), action based on subject matter and context (Nardi 1996), intuitive-improvisatory action (Volpert 2003), creative action (Joas 1992) or experience-based-subjectifying action (Böhle 2009). These concepts assume that goals and approaches to action are not defined ex ante, but are first defined in the scope of practical action. Practical performance and execution not only comprises the realization of previous decisions and plans, but also serves to elicit goals and the specific approach. We are specifically referring to the concept of experience-based, subjectifying action.[12] The term "experience-based" emphasizes the central role of experiences acquired in the active process. In this respect, experience does not primarily refer to experience acquired in the past in the sense of one's cache of experience, but to the actual process of experiencing and acquiring experience in the active process and resulting from taking action. An exploratory approach therefore results in special knowledge (from experience) with respect to possible forms and conditions of action. One therefore does not influence one's surroundings in order to control

[12] In this respect, cf. Böhle (2008, 2009) and Böhle et al. (2004) for an overview.

them in a one-sided manner, but through dialogue and interaction one elicits existing requirements and possibilities.[13]

With this approach, sensory perception is not restricted to information that can be clearly and precisely assessed by the intellect, but is directed towards the multi-facetted, diffuse properties and behaviors of specific circumstances. Perception in this respect is associated with one's subjective feeling and experience. Having a feel for technical processes or perceiving a situation as tense, pleasant or similar are such examples. Such perception attributed to a feeling or sense is not, as is often assumed, attributed to an "inner" process, but concerns the recognition of "external" circumstances (Böhle and Porschen 2011). A general theoretical foundation for this can be found in philosophical, phenomenological theories of perception and embodied feelings and/or embodied communication (Merleau-Ponty 1966; Schmitz 1978, 1994). Perception based on feelings and senses is associated with pictorial associative thought. Unlike analysis and reflection, it is directly involved in practical action. In contrast to "reflection on action", this is defined as "reflection in action" (Schön 2002) as well as "concurrent thinking" and "being alert and aware of the present task" (Volpert 2003, p. 63 et seq.). The designation experience-based-subjectifying refers to the special role of subjective factors like feelings and perception and one's relationship to the environment: This is not attributed to distance, but to proximity and association. Material circumstances are also perceived as and/or similar to subjects, which have "a life of their own" and can neither be calculated completely nor subjected to one-sided manipulation.

The studies available to date on experience-based-subjectifying action in a work environment have shown that this is necessary and successful particularly when it comes to dealing with imponderabilities in technical and organizational processes. Planned rational action is hardly possible in this case as possible forms and conditions of action are unstable and are not readily apparent. This is also the case with respect to innovation work. It is therefore necessary to proceed in an exploratory manner and taking possible approaches to solutions. In contrast to the management of imponderabilities, innovation work is not restricted to finding approaches to (re)creating a stable process, which are suitable based on the situation. With innovation work, it is also necessary to achieve a result, which has not been realized as yet or which was completely unknown to present. The requirements of innovation work are therefore much less definite and of a more open-ended nature. The exploratory approach as well as dialogue and interaction with the environment in the course of innovation work primarily relate to eliciting possible forms of action not yet known and realized. In contrast to the notion that innovative results occur suddenly and unexpectedly as a "creative idea", an analysis of innovation work returns a process-like development, where the results of individual steps each influence the further course of action and that unexpected and surprising effects and reactions are perceived not as a disruption and failure, but as

[13] In this respect, also cf. the observation of Schön that experts establish a dialog with things when solving problems (Schön 2002).

indications of forms of action, which have not been considered thus far. The sudden creative idea therefore turns out in most cases to be the end point of a previously initiated search for innovative results upon closer inspection. Likewise, the innovative result is not exclusively created by the individual as suggested when discussing personal traits that promote creativity (cf. Mittelstraß 2008), but in dialog and interaction with the environment and the effects of one's actions. An important prerequisite for this is perception based on one's innate feelings and senses. A high level of sensitivity for vague and not precisely defined indicators and evidence for promising approaches and results are necessary, particularly when it comes to developing innovative results. Innovation work requires that one has a special sense for yet unknown and not yet realized, but at the same time plausible results and approaches. In contrast to mere imagination and unbound creativity, innovation work requires that one always perceives the innovative result in the context of what already exists and possibilities for change associated with this. Having a special feeling for potentially allocated, but not (yet) recognized and realized developments is necessary. Particularly when it comes to successful innovations it is often determined in retrospect that they "were in the air". Having a feeling for the immanent "logic" inherent in the development process also falls under this point. It enables one to "anticipate" how the development will progress further. The mental imaginative processes and associations attributed to perception on the basis of one's innate feelings and senses primarily concern notions of possible uses of results and the context in which they are used in innovation work. The statement of a developer, that he imagined being a sensor when looking for a technical solution for a sensor, is a typical example of this. Only in this way was he able to realize what the sensor needed to do in this case and the conditions necessary for this. Such notions do not come from one's imagination, but are based on experience. This also includes anticipating potential solutions and results in an imaginative manner. It is integrated in practical action as is concurrent thinking and (initially) occurs in the course of practical action and as a result of practical action.

3.5 Definition of the Situation: Playful

Work and play are often considered to be antipoles (Huizinga 1956, p. 49); the term play initially gives rise to associations such as "pastime", "uselessness" or "pointlessness" (Runkel 2003; Fritz 2004; Huizinga 1956, p. 183). Upon closer inspection, however, it becomes apparent that interpreting one's work situation as a game world brings about exactly the qualities that promote innovation work. After all, a game concerns taking a playful approach in order to achieve childlike curiosity and enjoyable immersion in unknown and playful experimentation. "Play is special as it brings aspects of what not yet is (...) to life in extracts. (...) Play represents looking forward in a dialectic manner and anticipating actual activities" (Fritz 2004, p. 114). Constructing an "as-if world" (Keller 1998, p. 58) appears to be a sustainable alternative approach to action in consideration of the uncertainty, open-ended nature and limited ability to plan

innovation processes and the associated requirements of innovation work when it comes to creating innovative solutions and changes. By transforming a situation into a situation of action[14] with the essential characteristics of a game, the acting parties go beyond the objective reality of everyday life, which is constituted by mutual action in the same cultural context and then "to constitute a new reality, which corresponds to their present needs and goals and permits their realization" (Oerter 1999, p. 9).

The social interpretation and framing of an active situation as a game is apparent based on five dimensions: instrumental non-instrumentality, controlled unpredictability, fictitious reality, protected involvement and a relaxed suspense. These dimensions have one main characteristic in common: their ambivalent nature. Scheuerl defines this as the "ambivalence in the essence of a playful dynamic process" (Scheuerl 1979, p. 88). Callois writes that the game alternates between "paida" and "ludus", whereupon "paida" is unrestricted improvisation and a zest for life and "ludus" embodies the principle of strict regularity. The game therefore alternates between these two methods of play (Callois 1960). The ambivalent nature of the game therefore oscillates between the aspects of individual dimensions, which are related in the sense of both . . . and . . ..[15] The five dimensions are described below.

Instrumental non-instrumentality: One of the game's main criteria is that it discovers its own purpose in itself (Scheuerl 1979; Piaget 1969, p. 189; Oerter 1999, p. 5).[16] The game does not, from the perspective of playing, relate to a purpose outside of the game, for which reason it appears pointless. This allows participants to immerse themselves in the game, to "lose themselves in it" and to engage in it with neck and crop. One forgets time and space in this state.[17]

If observed from an outside perspective, the game is in no way pointless a priori, but may have a wide range of effects, which extend beyond its own scope. A known example is practicing social conduct as child's play as part of socialization. The acting party (party partaking in the game) may very much be aware of the game's higher level purpose or even endeavor to achieve it. But it is essential that this purpose is "forgotten" in the game.

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[14] Scheuerl also stated: Whether a movement or action is recognized as a game depends on the initial understanding and interpretation. The game therefore comprises a subjective component, which is essentially only known to the "player" and therefore decides for himself whether his "action" constitutes a game (cf. Scheuerl 1997, p. 215 et seqq.).

[15] Runkel refers to Schiller, who in his letter "On the Aesthetic Education of Human Beings", constructed binary codes, which are connected in play. As a result, play endeavors to create a combination of binary codes like becoming and being or change and identity (Runkel 2003). Scheuerl speaks of "the moment of ambivalence" (cf. Keller 1998).

[16] Cf. the utility of play from a psychoanalytical and action-theoretical perspective (Oerter 1999) and play as a fundamental principle "which guides life by means of playful handling to self completion" (Röhrs 1983).

[17] According to Jürgen Fritz, emergence in the process of play, the merging of the players with the environment and the feeling of expanding oneself can be explained quite well in referring to the "flow theory" developed by Csikszentmihalyi (Fritz 2004, p. 99). For this, also cf. Csikszentmihalyi (1985) and Oerter (1999). In this context, Fritz (2004) refers to the "here and now", which is essential when immersing oneself in the process of play. Scheuerl (1979) refers to the "moment of inner infinity".

Controlled unpredictability: The game world is not a world without rules. Rules provide the necessary framework especially when it comes to regulated games,[18] which the game follows when in progress and without which the game would not work. However, this also includes communicated rules or spontaneous rules, which one defines oneself (Piaget 1969). Ludwig Wittgenstein talks of "the limits of the goal [being stretched] by agreements". Limiting the game in terms of space and time must also be mentioned in this context, which Huizinga explores in particular detail (Runkel 2003; Hubig 2003). The course and outcome of the game are, however, very much open-ended (Fritz 2004, p. 58 et seqq.). Rules therefore provide a framework for a game without dictating it (Runkel 2003).

Fictitious reality: Child's play appears to be best suited to emphasizing that a constructed game situation is understood as "another world", which differs from our real world. Fictitious realities are established, objects are transformed and actions receive a different importance (Fritz 2004). The acting party is "'not interested' in any concerns of reality" (Scheuerl 1979, p. 79). However, action within the game world resorts to circumstances and processes in the real world. As a result, real objects appear in the game world[19] as is the physical body of the participants.

Protected involvement: Another dimension is immersing oneself in a fictitious reality. An understanding that action is attributed not to the real world, but to that of a game, makes it possible to assume available roles in the game world and to test methods of action, which could otherwise not be realized in this manner in the real world (Fritz 2004, p. 83). At the same time, the participants know that their action, though potentially sanctioned in the game itself, has no effect outside of the game (Scheuerl 1979, p. 71). Action within the game does not have the same serious nature, the range of consequences and binding nature of reality, after all it was "only a game".

Relaxed suspense: A game situation does not remain on a high level of engagement in a linear manner. For the players, the game shifts between the phases of suspense and relaxation. The phases of suspense unleash considerable impulses due to the high level of engagement for the participants. In this context, Goffman refers to "interactive suspense", which occurs as the result of pleasure experienced through participation in the game (Runkel 2003, p. 29).[20] The relaxation phases permit reflection and therefore refer to cognitive elements.

The dimensions "instrumental non-instrumentality", "controlled unpredictability" and "protected involvement" of the game situation are particularly important for the innovation work. Though the purposefulness of work is not completely

[18] "The regulated game is that of socialized being" (Piaget 1969, p. 183). The regulated game in a child primarily begins to develop at the age of 7 and 11. Before, children play either symbolically or perform other simple motor exercises (Piaget 1969, p. 184 et seqq.). "In the regulated game, the rule completely takes the foreground; all other forms of interaction are neglected" (Oerter 1999, p. 65).

[19] In this respect, cf. also Oerter (1999) and his explanations concerning subjective, objective and abstract valence and on forms of mutual figurative reference.

[20] For Heckhausen, moments of suspense in a game are bound in activation compasses (Fritz 2004, p. 97).

dispelled by the game situation, it does not offer a guideline for action in the game and provides room and acceptance for activities whose goal and result are not known and cannot be substantiated ex ante. Mental blocks are therefore disengaged, associations are allowed to develop and new ideas result "in the bygoing" as unplanned effects. The non-instrumental character also makes it possible to try out new things,[21] to run through all possibilities, permit suggestions and actions without being blocked and restricted by uncertainty and/or (not) yet known things.

Furthermore, the controlled unpredictability of the game situation makes it possible to discover and generate new knowledge and new methods on a situational level based on tested methods and knowledge that has been secured in the process of acting. Tested methods and secured knowledge therefore do not represent restrictions with respect to innovative results, but provide material and the impulse, which can lead to innovative results due to the dynamic nature of the process.

Finally, the protected scope of the game makes it possible to immerse oneself in new considerations and to "allow oneself to be completely caught up in ideas". Preliminary results are allowed to emerge, one is able to conceive them, test them and decide in a preliminary manner in favor of certain aspects without committing to this decision. Threats and blocks, which are the result of worry about potential failure, are also reduced as a result.

3.6 Overview

In summary, the aforementioned characteristics of work action as part of innovation work can be presented as follows in Fig. 3.1.

Innovation work Characteristics of work action		
Subjective attitude **Artistic**	Form of action **Experience-based**	Definition of the situation **Playful**
Open to the unknown, sense for what is possible	Exploratory approach, procedural development	Instrumental non-instrumentality
Productive dealing with crises and faults	Feeling for immanent developmental logic	Controlled unpredictability
Inner desire or interest, personal expression	Sensory perception and imaginations of the usage context	Protected involvement

Fig. 3.1 Innovation work – characteristics of work action (based on Böhle and Bürgermeister 2011, p. 11)

[21] Huizinga worked out "unrestricted action" as one of the essential characteristics of play (Huizinga 1956, p. 20).

The concept of innovation work presented here is a general model. It is an analytical concept for describing how innovation work takes place in the scope of specific work processes. Furthermore, requirements with respect to the design of innovation work in companies can be derived based on the above.

An empirical analysis of specific forms of innovation work in various work areas as well as the presentation of new approaches to promoting innovation work by management of informal work will follow in Chaps. 5, 6 and 7.

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