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# Qualitative Experiment as a Participating Method in Innovation Research

Annika Naber\*

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**Abstract:** »Das qualitative Experiment als partizipative Methode in der Innovationsforschung«. The term "innovation" has become commonplace. We are surrounded by "innovations," in our daily life. Who develops innovations? Even more importantly, how are they developed? Research approaches for finding answers to these questions regarding social innovations in an organizational context is the focus of this article. Under the assumption that social innovations are a result of learning, action, and social processes in organizations, practitioners are seen as developers of social innovations. To provide insight into the developmental process of innovation, I will compare the grounded theory methodology that Tom Kehrbaum utilizes for innovation research to the qualitative-heuristic methodology by Gerhard Kleining. Both methodologies are chosen because they enable researchers to analyze social processes, which lead to the solution of a problem. The main focus of this discussion lies in the qualitative-heuristic methodology and its use of the qualitative experiment. The reason for this emphasis is anchored in the interactive approach of the researchers with the field, which is well-suited for examining the process of improving strategies for searching and finding solutions for problems.

**Keywords:** Social innovation, social process, problem-solving processes, new production of knowledge, grounded theory, qualitative-heuristic methodology, qualitative experiment.

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## 1. Participating Methods in Innovation Research<sup>1</sup>

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Innovation drives our world. To come up with innovations, organizations search for innovative people. In our daily life, we encounter problems for which we need solutions. What are the conditions for being innovative? While people are embedded in organizations they become a part of social processes that occur in spaces within the organization. When problems develop within organizations, the potential for innovation exists.

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The purpose of this discussion is to present an approach that is based on a methodology that is well-suited for understanding human actions in the development process of social innovation. The goal is to enable researchers to uncover implicit structures of social processes that happen while members of an organization solve a problem. One key result of the research should be a cross-organizational concept that shows under which conditions members of an organization solve problems. With that purpose I chose the qualitative-heuristic methodology and its qualitative experiment as the research method by Gerhard Kleining. The reason for choosing this methodology and with it a participating method is based on: 1. By using a qualitative research approach, researchers are able to discover something new that they have not expected. As Kleining indicates, the success of such a research process depends on a dialogue and interaction between researchers and practitioners by following the rules of the qualitative-heuristic methodology (Kleining 1994, 17). By choosing the qualitative experiment as one of its methods, researchers follow a participating approach to the field. This method is close to the object on a lower level of abstraction resulting in new revelations for researchers as well as for practitioners. Thus, through a participating approach in the field the discrepancy between theory and practice is minimized. 2. Following the rules of the qualitative-heuristic methodology, researchers modify the research field to cause irritation. By creating dynamics in the field, researchers are able to discover the implicit structures of the process for searching and finding a solution for a problem (Kleining 1995, 161f). 3. When analyzing the research data, Kleining suggests searching for similarities to become aware of the structure of the research object, as he describes in his fourth rule of the qualitative-heuristic methodology (*ibid.*). The analysis of data that is gained through utilizing the qualitative experiment is based on that rule as well. According to Thomas Burkart, the approach of the qualitative experiment enables researchers to discover structures in qualitative data they would not have deduced by using other methods (Burkart 2010, 260f).

According to a statement by Ulrich Frey, whose focus is error research, the way humans think is a heuristic process, “messy, full of mistakes and irrational, but as well creative and efficient” (Schaefer 2012, 140; translated by the author). This way of searching and finding a solution provides a reason to utilize a heuristic methodology to study such social processes during daily life in organizations. This leads to the thesis that a participating method referring to the qualitative-heuristic methodology by Kleining is an effective approach for researching the conditions for practitioners developing social innovation in an organizational context. Under the assumption practitioners discover a solution followed by the development of new products, new guidelines, or anything that might help them in their daily lives, I suggest the qualitative experiment by Kleining as a participating method for discovering such structures. The main reason for this method is that researchers are able to understand human action through following its strategies and techniques. By utilizing a participating

method researchers have the challenge to not only observe practitioners in their daily life, but also to interact with them to gather process-generating data through real-time research activities. Choosing the qualitative experiment to discover implicit structures of problem-solving processes in organizations allows researchers to take an action-oriented method according to the pragmatic perspective by Michael Hutter, Hubert Knoblauch, Werner Rammert and Arnold Windeler for examining innovative and creative acts. Such action can be observed when practitioners begin to act differently, modifying their routine and ultimately develop social and material foundations for their solutions. A solution will become an innovation through its selection, repetition and diffusion in the field. (Hutter et al. 2011, 13f; Hutter et al. 2015, in this HSR Special Issue) Concerning the question for conditions of problem-solving processes in organizations, in this article, spatialities will be focused as one condition for such social processes which structures can be discovered by following the rules of the qualitative-heuristic methodology by utilizing the qualitative experiment.

The core idea of this approach in innovation research is that researchers interact with practitioners during their problem-solving processes. Following such an idea, the challenge occurs of having a long-term research process where the result is unknown at the beginning. In the context of innovation research this means that not all solutions will count as an innovation afterwards. I assume that a research of such social processes while they are happening has a value to innovation research. By discovering conditions under which practitioners solve problems and where solutions count as an innovation later, researchers are able to distinguish between structures of problem-solving process that lead to a social innovation. Such a research result is a benefit for practitioners in organizations to improve their strategies of searching and finding solutions. Furthermore, this requires a discussion of the new production of knowledge referring to Helga Nowotny, Peter Scott and Michael Gibbons (2003). Kehrbaum has previously taken an action-oriented approach to analyzing innovation. In his analysis of social processes he utilizes the grounded theory according to Anselm Strauss. The grounded theory as well as the qualitative-heuristic methodology is a qualitative-interpretive approach. The main difference between them is the interaction between the researchers with the field in the process of generating data. While researchers who follow the rules of the grounded theory observe the research field and have interviews with practitioners to be able to describe the research field, researchers who follow the rules of the qualitative-heuristic methodology do active interventions and have dialogues with practitioners to be able to discover conditions for action in the research field. A description and comparison of both methodologies will show more clearly why the qualitative experiment as a participating method is best suited for discovering the implicit structure of problem-solving processes by examining the spatiality of workplace kitchens in organizations as a condition for such social processes.

I will structure my analysis as follows: I will give an understanding of social innovation and its link to social processes. I will show Kehrbaum's research approach and his connection to the grounded theory. I will link analyzing social processes in innovation research to the new production of knowledge according to Nowotny et al., with a major focus on the qualitative-heuristic methodology and its qualitative experiment by Kleining. The distinction between the qualitative-heuristic methodology and grounded theory will lead to the benefits of Kleining's qualitative experiment as a participative approach for innovation research.

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## 2. Social Innovation as a Result of a Problem Solving Process

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*Knowledge does not translate into action,  
but must be designed for action.*  
(Hackett 2013)

This article focuses on social processes in an organizational context, to solve problems in which the result is a social innovation. First, I will provide an understanding of social innovation. In the second step of this chapter, I will show how Tom Kehrbaum links the grounded theory as a methodology for innovation research to social processes. By following the rules of this methodology researchers are prohibited from active interventions with the research field as they participate in the problem-solving process. This leads me to the third step in this chapter, setting forth my position that the qualitative-heuristic methodology by Kleining and its qualitative experiment as a participating method is best suited for innovation research. The reason for this lies in discovering structures of the development of social innovation by practitioners by examining problem-solving processes. According to Nowotny et al., a participative approach to the field is a tendency in science. Thus I will link participating methods in innovation research to the discussion of the new production of knowledge to show the benefit of an intervention in the field. I will conclude this second chapter by indicating why researchers need to follow the rules of the qualitative-heuristic methodology to be able to understand the influence of spatiality as a condition for problem-solving processes.

### 2.1 Taking a Pragmatic Perspective on Social Innovation

Wolfgang Zapf defines social innovation as new way to reach a goal, for example with new forms of organization, regulation etc., which will lead to another direction of social change. At its core, social innovation will solve problems better than previous solutions, and therefore, is likely to be adapted and institutionalized (Zapf 1989, 177). According to Werner Rammert, practitioners develop social innovation outside of economic or political spheres. Instead,

social innovation is based on coexisting in communities or parts of society. It addresses new forms of participation, social integration, social equity, a balance of interests, individuality, and solidarity (Rammert 2010, 19). Alexander Kesselring and Michaela Leitner, researchers at the Center for Social Innovation (ZSI), define them as the “intended creation of new forms of social organization which apply to high valued goals and or specialized challenges and problems and might be oriented internal and external” (Kesselring and Leitner 2008, 206; translated by the author). By comparing these various perspectives of innovation in society, more specifically in the workplace, social innovation is a developed solution for existing problems by involved practitioners. If successful, the social innovation becomes institutionalized by other organizations.

This creational process necessitates a new approach for the solution of problems. Rammert requires, with the words of Latour to leave beaten paths, to have an ‘insane’ perspective on a problem, and to walk on ‘postponed’ paths to reach the goal (Latour 1998, cited in Rammert 2010, 11). Within this understanding, learning is a central dimension for developing and ensuring sustainable implementation of social innovation (Howaldt and Schwarz 2010, 106; Rammert 2010, 14). The authors of the introduction to this HSR Special Issue captured Zapf’s idea of studying “fields like education where social innovations appear” (Zapf 1989, cited in Jungmann et al. 2015, in this HSR Special Issue). This means members of an organization have to think, learn, and act autonomously during, as well as after, their interaction with social researchers in their problem-solving process. The guidance of the researchers during the problem-solving process must be retained after the process is completed. Kesselring and Leitner learned from their research that social innovations depend on social reflection and social action (Kesselring and Leitner 2008, 14). This coherence shows that organizations, as a field of learning, need methods and tools that help to drive the process of creating new forms of social organization. In an organization, social innovation is a ubiquitous process, as the research results of Kesselring und Leitner show. One of their key findings is that the development of this type of innovation is an embedded process for different reasons and with different goals. While small and middle-sized companies use them to solve problems, big companies develop them because of their social responsibility in society (Kesselring and Leitner 2008). This process of searching and finding a solution for a specific problem by affected practitioners in cooperation with researchers receives the attention of this article. Researchers need methods that are designed for grasping and discovering patterns in such a social process of education. More than that, it needs methods that give researchers the ability to interact with practitioners who are affected by the problem. By losing their distance to the field, researchers are able to relate to the perspective of practitioners by being involved in a problem-solving process. As a result, researchers can generate a reflecting process the practitioners can go through in which they can

find a solution and develop an innovation that researchers can consider to produce generalizable knowledge.

## 2.2 Grounded Theory as a Methodology for Having a Pragmatic Perspective in Innovation Research

What Tom Kehrbaum describes as ‘pragmatic change’ is a current topic in educational and social science: The gap between scientific knowledge and practical application is reduced. According to him, action-oriented research with cyclical processes is the key to develop a theory that changes action while doing a loop to practical experience that changes a theory. In theoretical perspectives on innovation, “Problem Solving” is linked to path dependence in which members of an organization are able to learn through loops and synergies. Furthermore, the theoretical discussion shows the connection between a development of innovations to education and qualification. Innovation, therefore, is a social process and is the reason an action-oriented research approach is needed (Kehrbaum 2009, 49, 57-60). The theoretical discussion shows the connection between the development of any innovation to education and qualifications of the members of an organization. Therefore, employee development and organizational learning are the foundations for developing any innovation. Cohen and Levinthal also identify the importance of learning and knowledge for generating innovations. Their concept of absorptive capacity indicates external knowledge needs to be recognized, appreciated (absorption) and integrated into internal knowledge (assimilation) and utilized for commercial reasons (Cohen and Levinthal 1990). It has also been shown that after learning processes, in which a problem has been solved, new actions are necessary. This point shows that an innovation as a product is designed for action, while its development process can be seen as a learning process for participants (Hackett 2013; Maturana and Varela 1992, 27).

Kehrbaum indicates that educational processes of individuals become more important for organizations. This is because such individual processes and social processes are interdependent. These processes, which are based on interaction, might be understood as organizational learning, just as problem solving in daily life is a process. Through a reflection of experiences, which are embedded in a time line of past and future, individuals receive a critical distance to their situation and problem. From that, individuals gain intentions, interests, and strategies for action to reach certain goals. For researching innovation as a social process, Kehrbaum suggests the grounded theory methodology (Kehrbaum 2009, 24, 43, 107-13).

By following the rules of the grounded theory methodology researchers are able to generate theories out of systematically gained and analyzed data. Barney Glaser and Anselm Strauss developed the grounded theory as an interpretive approach to generate a theory based on empirical data. Caused by the dif-

ferent theoretical backgrounds of Glaser and Strauss there are two directions of the grounded theory. While Glaser linked the grounded theory to critical rationalism and therefore to quantifying methods and research goals, Strauss developed, in collaboration with Juliet Corbin, a rather pragmatic form of the grounded theory which had a “systematic-experimental approach to reality” (Strübing 2004, 7, cited in Kehrbaum 2009, 62; translated by the author) as its foundation. Kehrbaum agrees with Strauss’ form of the grounded theory in which theories get generated in relation to practice and action. He points out that Strauss views theoretical concepts as changeable according to research results. Theoretical concepts can then be suited to analyze social reality, which are in a constant state of change, to generate theories. Strauss does not distinguish between a knowledge production in daily life or science. The main difference is that practitioners have to deal with daily problems while researchers do a scientific problematization. Both forms of problems need to be solved (Kehrbaum 2009, 60-4, 82).

Following Kehrbaum’s realization for examining social processes in innovation research researchers need a method with which they can minimize their distance to the action in the field. This postulation confirms the new production of knowledge (‘Mode 2’) that Nowotny et al. see as a trend in social science. According to their insights participating approaches to the field will increase. Such a new production of knowledge is a link to the qualitative-heuristic methodology which is well-suited for researching problem-solving processes in organizations that are a groundwork for the development of social innovation.

### 2.3 New Production of Knowledge as a Participating Approach in Innovation Research

As described, Cohen and Levinthal point out any innovation depends on education and happens in processes and cycles of reflection. Kehrbaum argues utilizing methods with an action-oriented approach is a needed ‘pragmatic change’ in educational and social science. How does the qualitative-heuristic methodology match this trend?

Nowotny et al. raised the discussion about ‘Mode 2’ that might be linked to innovation research and participating methods.

‘Mode 2’ knowledge is generated within a context of application [...] [which] describes the total environment in which scientific problems arise, methodologies are developed, outcomes are disseminated, and uses are defined. [The character of] ‘trans-disciplinarity’ [...] is [...] the mobilization of a range of theoretical perspectives and practical methodologies to solve problems (Nowotny et al. 2003, 186).

The authors describe such a production of knowledge as a creative act, in which researchers mobilize and manage externally the development of new theories and internally the dynamics of scientific creativity, such as the refinement of research methods (ibid.). The research process “has become a dialogic process, an intense (and perhaps endless) ‘conversation’ between research actors and research sub-



jects” (ibid., 187). It is a reflexive process that has the “consequence [...] [where] problem-solving environments influence topic-choice and research-design as well as end-uses” (ibid.). The following discussion on participating methods in innovation research should be seen in this light.

As Kehrbaum’s approach and Nowotny’s et al. description of tendency show, in social science there are research approaches required that link theory and practice. In Kehrbaum’s examples, such an approach is possible in innovation research. Based on Hutter’s et al. perspectives in innovation research, I will focus on the pragmatic perspective that follows an action-orientated approach. The pragmatic perspective asks for participating methods, which is a reason to utilize a heuristic methodology to study processes of solving problems during a daily life in organizations. Above that, according to James March and Herbert Simon’s approach an “innovation process is closely related to a ‘problem-solving process’” (Tosi 2009, 9). Referring to them, in organizations appears the problem that the “structure of active programs does not contain any which are adequate to meet organizational criteria” (ibid.). When this happens, a new structure of programs “will be initiated to solve the problem. [...] As more people in the organization become aware of the problem, the number of available solutions will increase” (ibid., 10). March and Simon also point out that “[t]he rate of innovation is likely to increase when changes in the internal and external environment make existing programs unsatisfactory” (ibid., 9). Such a learning environment is a commonality to the absorption capacity by Cohen and Levinthal, as discussed above, in which learning and knowledge are the key for generating any innovation.

Linking this theoretical approach to a pragmatic perspective in innovation research leads to the qualitative-heuristic methodology by Kleining as an approach to discover structures of social processes for searching and finding solutions for existing problems. Researchers who act according to the qualitative-heuristic methodology confirm the tendency of the new production of knowledge because they need to be creative in order to interact with the research fields to initiate irritation and dynamics and to be in a dialogue with practitioners to be able to relate the perspective of practitioners in their problem-solving process. As shown in an approach by March and Simon, a problem-solving process is the beginning of the development of an innovation and depends on participants. They also point out the importance of the location of innovation to the power and influence structure of an organization. Thus, the right to initiate organizational activity is a source of power and controls the process of originating and evaluating proposals (Tosi 2009, 10). Under the assumption that Kleining’s qualitative-heuristic methodology is well-suited for innovation research by discovering social issues for developing a (social) innovation, the qualitative-heuristic methodology will be described and discussed in the next step of this article.

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### 3. Qualitative-Heuristic Methodology in Innovation Research

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According to Kleining, social researchers have a duty to examine social issues considering “the dominance of nature science and their involvement in the economic system” (Witt 2004; translated by the author) and their impact. In his opinion, social researchers have to research in “physical-material and mental-ideological areas” (ibid.) to be able to find social issues. Thus Kleining estimates discovering methods as more suitable than the grounded theory, which is more of an interpretive method to research social issues. In this article I specify innovation by looking at social innovation as result of problem-solving processes for solving an existing problem. The goal of researching such social processes while they happen requires a methodology that enables researchers to participate in such processes. By following the trend that has been shown by Nowotny et al., researchers will have a new production of knowledge that combines the action of researchers in the field while doing research.

For a better understanding of the qualitative-heuristic methodology I will first address the main differences between it and the grounded theory. I will follow with a discussion regarding the rules of the qualitative-heuristic methodology, quality criteria and ethical considerations. I will begin to set the stage of the workplace kitchen as a field example to illustrate strategies and techniques of the qualitative experiment by designing the framework and the approach to the field.

#### 3.1 Distinction between Qualitative-Heuristic Methodology and Grounded Theory

The qualitative-heuristic methodology and the grounded theory are both qualitative-interpretive approaches which show several similarities in their rules. For example, researchers should be open minded about their research object, but also determine differences about each other, such as observation versus active intervention. I set the focus on the differences between these methodologies to point out for which research question and which methodology should be preferred.

According to Kleining and Witt, the early grounded theory by Glaser and Strauss had an explorative character, which changed through the further development of the methodology to interpretation by Strauss and Corbin. In Kleining's view such an interpretative approach does not follow a dialectic principle and is rather less crucial. In contrast to the grounded theory, the qualitative-heuristic methodology follows an explorative and discovering approach which is combined with dialectic. Accordingly, researchers have an inner approach that is based on criticism (Kleining and Witt 2000; Witt 2004; translated by the author) Acting according to the dialectic principle enables researchers to use

qualitative data to discover structures (Witt 2004). Kleining, therefore, wants researchers to go beyond an interpretation of data. Through interventions with the field, researchers are able to discover the structure of problem-solving processes in which the result will be a social innovation. Such research is not limited to an interpretation of observed actions, but enables researchers to explain research objects because they were participating in the problem-solving process and are able to relate and question the perspective of practitioners. Kleining points out main differences between the qualitative-heuristic methodology and the grounded theory (GT):

- “GT accepts commonalities and differences, heuristic tries to turn obvious differences into things that are in common.
- GT asks questions for what, how, where, why..., heuristic questions all results permanently (‘dialog principle’).
- GT follows a rather complicated ‘coding’ and ‘memo’ process focusing primarily on differences, heuristic emphasizes commonalities between groups” (Kleining 2007, 9; translated by the author).

Depending on the research question either one of them can be chosen. However, the qualitative-heuristic methodology is better suited for research questions that ask for discovering structures of problem-solving processes and require a participating approach other than the grounded theory. The benefit of utilizing the qualitative experiment as a method of the qualitative-heuristic methodology for examining such social processes of searching and finding solutions for problems, is discussed below.

### 3.2 The Rules of the Qualitative-Heuristic Methodology

By focusing on conditions for problem-solving processes in organizations, the qualitative-heuristic methodology gives rules for researchers to gain knowledge about such processes. Kleining rediscovered it as the process of improving strategies for searching and finding solutions for problems. He reconstructs the historical development and application of qualitative-heuristic back to the 19th century. One of his key findings is that even the disciplines of humanities and natural science used these methods to discover an object and its structures (Kleining 1995, 148). He argues the dialectical heuristic is required to ‘gather’ ‘true’ life data. According to Kleining, in order for this methodology to be successful, researchers must regard the dialectical heuristic as the only legitimate approach in which the true object will be found. In its core, dialectical heuristic enables researchers to explain the object after they have found the true object at the end of the research period. Researchers act on the principle of asking questions to the research object to create the discrepancy between development, change and movement. The reason for this is its enlightening dynamic, which discloses something new, which then leads to a discrepancy, which can again be gathered in a new circular process (ibid., 162f).

Similar to the new production of knowledge, this process depends on the creativity of the researchers. For such a process, Kleining defines four rules of the qualitative-heuristic methodology to give researchers an orientation in their research process. First, he indicates researchers must have an open mind about their research object. Kleining specifies this rule and states that researchers should not have a hypothesis which they just verify or falsify, rather they should be open-minded and flexible to be able to change their opinion about the research object if the data is different to what they have expected. Second, the object of the research process has to be open. Meaning, while the research process is still running, the object can change. To address this, researchers must be open-minded as explained in the first rule. Thirdly, the researchers have to act with a maximal structural variation of perspectives to relate to the actions of practitioners. According to the dialectical heuristic, researchers have to create dynamics of development, change, and movement for finding the true object at the end of their research by asking questions. Therefore, researchers have to be flexible in setting test conditions, most importantly adjusting for the appropriateness of research objects. By following this rule, researchers will obtain knowledge about an object that has been unknown before. One of these testing conditions is sampling, where the main characteristic of this methodology is that the research takes place in daily life. By taking this approach, the normal social structures in which social processes happen, will be discovered. Using this strategy, the research is embedded in 'extreme' situations, in which the exceptional characteristics of the object and everything that is connected to it (e.g. persons, social conditions, situations etc.) will be included in the research process. Kleining calls this sampling strategy the 'extreme-group-sampling.' Finally, the last rule concerns the analysis and evaluation of the generated data. The goal of this process is to get to know the structure of the research object. Kleining describes several steps to consider similarities in the data, which is the focus of his evaluation, rather than the discrepancies. The data is clustered in groups of cohesiveness and the groups are analyzed in terms of connections or disconnections between them. The similarities are categorized as both identity or likeness and negation or contradiction (ibid., 161f).

The connection between this methodology and social innovations is based on abductive reasoning and dialogue. In epistemical theory, abduction connects thinking and practice, which are embedded in social processes. The goal is to gain new ideas through a process of creative deduction, by not using conscious and logical thoughts. One result of an abductive process might be an 'appropriate' explanation of surprising facts that takes the surprising effect away. In the process, rules (deduction) and cases (induction) need to be derived. This new knowledge needs to show more or less strong theoretical or action-oriented consequences (Kehrbaum 2009, 101-9). If you look carefully at Kleining's qualitative-heuristic methodology, his rules lead researchers through a dialogue based on abduction and shows action-oriented consequences.

### 3.3 Quality Criteria and Ethical Regulations of the Qualitative Experiment

Based on the connection between the qualitative-heuristic methodology and social innovation, the following discussion addresses the qualitative experiment as a participating method in innovation research. This method is close to everyday life and to the research object which brings a benefit in practice and data for scientific research. In terms of data collecting and analyzing, the method will be discussed referring to quality criteria according to Ines Steinke (2010) and ethical regulations according to Mechthild Kiegelmann (2010).

According to the quality criteria for quality social science by Steinke, as well as in the qualitative-heuristic methodology by Kleining, the opinion of researchers about the research object needs to be modified appropriately to the knowledge of the research process. With such an abductive approach researchers remain open to irritations during the research process (Steinke 2010, 323, 327; Kleining 1995, 161). Testing for objectivity, reliability, validity, and range of validity needs to be integrated in the qualitative-heuristic methodology. Kleining suggests looking at objectivity as a process of intersubjectivity, as described by Steinke. Reliability is established by the disappearing of differences during the process of analyzing for similarities. Validity is established by a maximal structural variation of perspectives – out of this result follows the range of validity (Kleining 1982, 246-8, cited in Kleining 1995, 163). A successfully executed analysis shows an internal validity and even new data and further perspectives will not bring new results. Such a saturation of knowledge is reliable when all data can be subsumed under the same cluster. Kleining calls this testing for similarities the 100% rule. As long as contradictions occur in the results, the analysis for similarities needs to go further (Kleining and Witt 2000; Kleining 2007, 7f).

According to Kleining, researchers are inherently moral due to their involvement in the problem-solving process. Through the participating approach they are able to relate to the perspective of practitioners as they discover structures of the process and explore and protect the research object (Kleining 1995, 177). Because of the active intervention in the problem-solving process researchers must not forget the process ethic. Researchers need to be aware of the relationship between them and the practitioners during the research process as such a relationship might have long-term effects on the practitioners in their daily life. For that reason, researchers must understand practitioners as subjects who have their own expectations of the research process. It is critical for researchers to consider the ethics of their actions and how this concerns the daily life of practitioners (Kiegelmann 2010, 386ff). This regulation is fulfilled by the participation of the researcher. Burkart is clear researchers must take care of practitioners during the experiment to not damage their daily life (Burkart 2010, 261).

The points indicate the rules of the qualitative-heuristic methodology address the quality criteria and ethical regulations required for qualitative social

research. Based on the assumption that innovation research in organizations needs participating methods that are centered on the qualitative-heuristic methodology, the qualitative experiment will be explained and discussed in chapter 4.

### 3.4 Examining Problem-Solving Processes in an Organization – The Qualitative Experiment – Framework and Approach to the Field

The qualitative-heuristic methodology by Kleining is well-suited to discovery methods used in the field, specifically the searching and finding processes of practitioners. Because of that, the research methods need to be customized for this approach. To discover the structures of social processes by looking first at their conditions I suggest the qualitative experiment by Kleining because of its strategies and techniques. To illustrate this, in the fourth chapter I will transfer the strategies and techniques of the qualitative experiment to workplace kitchens as a fictive example.

A workplace kitchen is a special spatiality in organizations. In such an area most people talk to each other, usually with the intention of taking a break from work. Others see the company kitchen as an informal space to discuss business matters or to brainstorm new thoughts and ideas. In general, it is a platform to get connected, to build trust and to exchange information by informal communication and discussions of new topics and ideas which are important for reflection and learning (Won et al. 2000).<sup>2</sup> In some places workplace kitchens are installed to generate such side effects as we see in the documentary about our modern workplace “Work Hard – Play Hard” by Carmen Losmann in 2011.<sup>3</sup> In other places, kitchens cause conflicts, e.g. when the coffee machine permanently shows errors and everybody feels as though they are the only one who fixes it. Or, when the kitchen seems dirty all the time even though it seems everybody cleans the space every day. There are also instances when conversations suddenly stop when another person enters the room. We all know of similar situations. Sometimes there is a mixture of conflicts and new ideas regarding how to solve the problem that causes the conflict. The kitchen is a special location for organizations where social processes take place in a daily work life. How are a workplace kitchen and its extensions a condition for social processes in which practitioners solve problems in organizations? To answer such a question, it is necessary to discover the structure of social processes in kitchens in which practitioners solve problems. The company kitchen is a fictional example for utilizing the strategies and techniques of the qualitative experiment.

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<sup>2</sup> Markus Won, Birgit Lemken and Volkmar Pipek highlight in their discussion the importance of spaces like a kitchen for relationships, trust, reflection and learning in organizations. More than that, they argue that such a space for social processes is missing in virtual organizations which causes problems for further education (Won et al. 2000).

<sup>3</sup> Read more about this movie on <<http://www.workhardplayhard-film.de>>.

Before discussing the qualitative experiment itself in relation to this method I will design a framework, referring to Nina Baur (2008), to research the conditions for problem-solving processes. I will also explore an approach to the field and a review of the role of the researcher, according to the work of Stephan Wolff (2010).

### 3.4.1 Framework to Research the Conditions for Problem-Solving Processes

Which conditions are present for solving problems in organizations? This research question addresses organizations as an arena of social action. Important for the choice of the methodology requires members of an organization are concerned by a problem that must be solved. The goal is to discover the structures of problem-solving processes in organizations through which the practitioners develop a social innovation. One key result of the research should be a cross-organizational concept that shows under which conditions members of an organization solve problems. With this goal, what follows is a multi-level-analysis between the micro- and meso-level. In the analysis of problem solving processes in an organization, we must look at the influence of conditions. Institutional framework is important for problem-solving processes in an organization, however, spaciality in organizations is where social action for solving a problem takes place as this is where the social processes occur. Spaciality is defined during the research process. As an example, I will demonstrate how a workplace kitchen is understood as an arena and a condition for problem-solving processes. According to Baur, social action reproduces over the time (Baur 2008, 201). This allows for discovery of structures of social action by data gathering over a period of weeks. It means that researchers are able to discover the structure of a problem-solving process because practitioners will repeat their way of searching and finding solutions over the time. The structures of social action and its conditions are then compared to other organizations (Baur 2008).

### 3.4.2 Approach to the Field and the Role of the Researcher

Stephan Wolff defines a research field as a natural social field of action. In the example of the qualitative experiment, kitchens are understood as such field of action. Wolff points out researchers need to consider two major questions for an interaction with the field:

- 1) How can a researcher get in touch with the research field and motivate practitioners to cooperate? Research happens as a social action. Practitioners have to agree on dealing with unusual impertinences, e.g. “to spare for conversations, partly give up their spatiality sovereignty, stand awkwardness, [...], accept questionings of self-evidence” (Wolff 2010, 335; translated by the author). Above all, practitioners should take initiative

to empathize with the researcher (for offering him interesting data); smooth the way for the researcher; answer questions they have never thought about before and which sense might be unclear to them; trust the researcher without certainty; explain to other people the researcher and his project; signalize privacy by even knowing to be observed (ibid., translated by the author).

- 2) The researcher must make sure to cover all factual, time-bound and social framework conditions that are necessary for a considered execution of research and that he is not in any way limited in his opportunity for taking action in the field. How does the researcher position himself accordingly? Wolff indicates the approach to a field is a never fully completed task for which researchers depend on the collaboration of the practitioners. Such an approach to the field makes the insight on structures and processes of research as a social action and the examined field of action possible (ibid., 336).

With the choice to think about kitchens at the workplace as an example for utilizing the qualitative experiment, organizations are research fields. Researchers must face different issues for an approach to this field. An organization can and will control a research approach to it through different practices to keep curious third parties out of them, generate information, influence researchers and take control over the use of the data. Besides this, there are often hurdles and routines implemented which lead to formal processes through official channels, e.g. contract management. Researchers can deal with these issues by understanding such “immune response” by practitioners as interaction effects. Its dynamic depends on the motivation of an organization for being a research field and the transparency of the research intentions by the practitioners.

To gain access to an organization as a research field, it is important to know formal ‘gatekeepers’ who have the power to make a decision about their organization being a research field. Informal ‘gatekeepers’ might only be a first step getting into an organization. According to Wolff, decision makers are interested in five points: a reliable research firm; no harm for members and groups of the organization; ability to trust in their researcher’s willingness to cooperate, solidarity and discretion; a minimal disturbance of the organization’s daily business; and that the researcher leaves the organization in a foreseeable time. In pre-discussions about the research, researchers usually cannot give clear answers to these points and practitioners generally accept the lack of clarity by the researchers prior to beginning the research project. This shows that decision makers are less interested in the research goal and method in the beginning, but they would like to get to know the personal appearance of the researcher and his willingness to listen to suggestions and sensitivities of the field. Therefore, not all questions about content and methods need to be answered during the initial conversations regarding the research project. Once the research has begun, researchers can provide more details.

The research project is influenced by the development between the researcher and practitioners. Role relationships, forms of communications etc. determine the



acceptability of methods in certain situations, which topics may be discussed further or in which events in an organization a researcher is allowed to take part. Researchers must accept those decisions. Thus a progressive strategy for the approach to the field is important. Wolff suggests starting with a vague research question, with the goal of ensuring and framing an appropriate situative context for the research process.

Because of the ‘immune reaction’ strategies practitioners may use for preventing their organization from becoming a research field, researchers are keenly aware even though they may have obtained entry into an organization, they may be excluded from what is “really” happening in the field. When members of an organization know, for example, that there is a researcher in their workplace kitchen, they probably will not discuss all topics in that room or will not tell him what is happening in other spatialities of the organization. Looking at workplace kitchens as an arena for exchanging private and work related issues, the researcher will increasingly learn more topics over a period of time when he is no longer a total foreigner to the people in the field. This point shows the importance for researchers of establishing closeness and building trust to people in the field in order to be able to examine the research object. Frequently, researchers will believe they understand the problems of the field better than the practitioners themselves. This ambivalence of inferiority and power appears to the researcher as well as to the practitioners who are not certain about the research. There are good reasons for a researcher not to know everything about what is happening in the field. For example, when practitioners give information to the researcher and tell him later that nobody is supposed to know about it, the researcher has to deal with that secret. It is easier for a researcher when practitioners keep such information from him. How does the researcher need to position himself in relation to the field? According to Wolff the approach to the field is a never fully completed task for which researchers need collaboration with the practitioners. Such an approach provides insight on structures and processes of research as a social action and the examined field of action possible (Wolff 2010).

As we can see, a researcher is required to deal with different issues in order to make sure to cover all factual, time-bounded, and social framework conditions that are necessary for a successfully executed research or to be not limited in his opportunity for taking action. All mentioned aspects of approaching a research field are relevant for participating methods in innovation research. Such a research process depends on the collaboration of the practitioners with researchers and their willingness to deal with irritations caused by the researchers. Examining problem-solving processes in organizations also depends on the agreement of decision-makers. According to the qualitative-heuristic and, as we will see in the next chapter about the qualitative experiment, the research process needs to get started in order to be able to provide more clarity about the research goal and object.

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#### 4. The Qualitative Experiment. The Workplace Kitchen – A Great Place for Problem-Solving Processes

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In the previous chapter regarding the qualitative-heuristic methodology, I have shown that an active intervention in the research field enables researchers to discover implicit structures of problem-solving processes in organizations. The main reason for choosing this methodology is that researchers can relate to the perspective of practitioners when they participate in such a social process. This link between the qualitative-heuristic methodology and developing social innovation in organizations is the foundation for utilizing the qualitative experiment as a participating method in innovation research. It is a less-common method in social science but in its strategies and techniques it has significant potential for innovation research. Therefore, I will combine the explanation of the qualitative experiment with examining a workplace kitchen as a fictional example for spatiality as a condition for problem-solving processes. In most cases, the results of one research would be compared to other research results, however, for the purposes of this article one organization will be used exclusively to illustrate strategies and techniques of the qualitative experiment.

The qualitative experiment takes place in the workplace kitchen of a start-up software company with less than 20 employees. The organization is considered to be innovative with a modern culture. The manager of the company agreed on the research under the condition that he receives the results and with the assurance competitive knowledge is kept secure. The researcher agreed on providing the research results because according to Burkart, the results should be available to practitioners as well (Burkart 2010, 260f). The kitchen is a large, well-lit and warm room with a glass door. Employees are provided free coffee, tea and water as well as all the equipment employees need to prepare their meals and snacks. There is also a table large enough for most employees to sit and have their meal, a beverage or to simply sit and relax. There is a foosball table for breaks as well. People not only use this room for lunch and breaks, but also for talking about business, new ideas, challenges at work, and their personal lives. Additionally, the space is often used to host internal meetings and job interviews. Here you find social processes that are related to spare time, work and the organization. Is this kitchen a condition for solving problems in the organization? What are the structures of problem-solving processes in this kitchen? How can a researcher answer these questions by using strategies and techniques of the qualitative experiment?

According to Kleining, “the qualitative experiment is the intervention through scientific rules into a (social) object for researching its structure. It is the explorative, heuristic form of experimenting” (Kleining 1995, 148; translated by the author). Here he indicates every individual and collective social relationship can be an object of its research. In addition, it impacts all connected

appearances, objectifications, requirements, consequences etc. (ibid., 149) During the process of the qualitative experiment, researchers ask

‘questions’ to the object that will be answered with the results of the experiment. [...] An answer generates usually a new question (and possibly a new experimental arrangement), which generates a new question and so forth, until the structure of the object is enlightened. Thereby researchers go ahead from something special to general which impacts the special (‘totality’). The process is circular, researchers circle around their object. Beginning and end of an experiment can contradict each other (Kleining 1982, 246-8, cited in Kleining 1995, 162; translated by the author).

For discovering structures of problem-solving processes in the described workplace kitchen researchers can utilize different strategies and techniques for gathering data of such a social process of improving strategies of searching and finding solutions for problems. Using the qualitative experiment researchers provide structure for the process and a method for reflection to support the process of searching and finding solutions for a problem. This also goes back to the human nature of heuristic and abductive thinking, which shows that this method allows researchers to work with practitioners in their daily life and with their natural way of thinking.

The practice of the following strategies and techniques is not standardized. More importantly, researchers need to suit them for the research object. This customization is possible because researchers are involved in the experiment themselves. During the data collection, researchers have to act according to the dialectical heuristic. Researchers initiate dynamics in the field to discover the structure of a research object. The involvement of the researchers in the experiment implies the inherent morality of the qualitative experiment and its goal to discover structures and conditionality of social relations (Kleining 1995, 116, 177). In the following part of this article I will transfer the strategies (maximization/minimization, testing limits and adaption) and the techniques (segmentation, limitation/expansion and modification) to the workplace kitchen example and using a series of questions, you will be guided through the scenario.

Imagine we are in the midst of our research and we build trust among the members of the organization. They talk to us about a current problem in the organization and then we close the glass door of the kitchen during the conversation. Let us focus on the communication in the kitchen and the interaction with people outside of the room. Will the topics of this meeting be discussed more intensively than with an open door? Has the communication been maximized? Do members of the organization feel uncomfortable because of the closed door and leave? Has the communication been minimized? Are members of an organization seeking a dialogue with a researcher about a problem? By minimizing the entrance and exit flow to the kitchen we can observe how the members communicate and determine if people from outside are allowed to come in. Is the closed door a sign for other people to not interrupt? Will the members

who are in the kitchen select who is allowed to come in? Will other people become involved in the communication and share their opinion about the topic?

By closing the kitchen door a researcher can test several limits, e.g. under what conditions does relevance switch to irrelevance and structure to arbitrariness? By testing limits, researchers are able to discover structural characteristics, for example, process, stability and permeability of limits. Do other people feel free to enter the kitchen? Is a kitchen the only place for people to talk to each other as they do in the arena of the kitchen or are there other locations in the workplace that provide the same communication dynamics? Will they find a new space to congregate when the kitchen is occupied? It is up to the researcher to determine if the kitchen is the only space for such communication or if there are extensions of the kitchen as a space to discuss problems and to find solutions. By opening the door researchers can see if people will come into the kitchen to continue conversations they had outside of the kitchen. What are the limits of a kitchen on social processes? Is it a “magic” place where people have conversations they would not have anywhere else in the organization?

Under the assumption a kitchen is a space for social interaction in organizations where people have communication, interaction, reflecting processes, new ideas, to name a few. It is critical researchers protect the uniqueness of that spatiality. Researchers have an obligation to be very sensitive in their interaction to protect the social processes around the research object. The kitchen is not only a workplace it is a place to rest, to recover from work, to clear the mind and to socialize with friends and colleagues. This means closing the glass door while having a conversation might irritate people and brings out new dynamics in the organization but it should not jeopardize or damage social processes in the kitchen or relationships between members of the organization. At the same time, researchers must take care in this situation not to become a therapist for the practitioners. In order to protect the privacy of practitioners, a researcher also may excuse himself to leave the room for a while. The focus of the dialogue between researchers and practitioners must remain on the social processes in which problems are defined and solved. For generating a dynamic in the field that will show how practitioners of that particular organization act when there is a problem, researchers can close the kitchen door. This would be a minimal interaction with the field that could give first insights. How do members of the organization react when they want to have a coffee but the door is closed? Will they just come in? Will they ask if they may come in? Will they turn around and come back later to see if the door is open then? How do members of an organization interact with each other in order to address a problem?

By closing the door, as described above, a researcher separates members of an organization and generates dynamics inside and outside of the kitchen. In such a decay process, subgroups will regenerate. People outside of the kitchen might find other spaces for conversations or they start to search for a new or different way to interact with the people in the kitchen. After the segmentation

the 'sense' of the research object needs to be proven to determine if social interaction exists or if it is just a construction of the researcher. When the two groups are in interaction and communication with each other there is a social process taking place for searching and finding a solution, for solving the problem of how to deal when the kitchen door is closed in front of one group. The second way to subdivide a research object is by creating a new form of combinations of separate parts. By following actions of the separate parts to each other, their characteristics show up. When the kitchen is used as a place for meetings not all members are involved in, the kitchen which was meant to be an open space for everyone will lose this characteristic for as long the meeting takes place. What will people do if they are thirsty or hungry but are not allowed to enter the kitchen? How will they interact with the group in the kitchen?

By closing the door, a kitchen is no longer an open space. It still is an arena for social processes but its flow of participants is limited as long as the door is closed. In contrast to that stands intensification as a modification of the research object. By using this technique, parts will be added to the research object with the goal to discover which parts destroy the object and which will be adapted by the research object. The material for this experiment is gained out of the research object itself or out of nearby objects. Previously we just closed the glass door. People are still able to communicate with each other non-verbally even though access to the room is limited. What will happen when the researcher covers the glass so no one is able to look through the door? Does a curtain strengthen social processes for solving problems by people who are inside the kitchen? Or does a curtain destroy the interaction between members of the organization when no one from outside can interact with people who are inside of the kitchen?

According to the technique of substitution the research object might be replaced by another part. The researchers focus relies on those parts which are interchangeable at the research object without modifying it. In this context the goal is to generate a maximal effect by a minimal effort. As a result of the modification, researchers might discover idiosyncrasies of the research object. It might be that the research object will be transformed into another that covers characteristics of the original object. As explained, the kitchen is also used for business purposes, such as meetings and job interviews. Where do members of the organization spend their time while the kitchen is not available? What happens at those places? Do they interact in the same way as they do in the kitchen? While the qualitative experiment accrues similarities by contradictions (inversions, negation etc.), which seem to be totally distinct, these contradictions become more clearly defined during the analysis (Kleining 1995, 166f).

The process of data collecting shows the interdependence between researchers and practitioners. They are in a subject-subject relationship in the daily life of the practitioners. On the one hand, the qualitative experiment gains data for researchers, while on the other hand it should enable practitioners to improve their strategies of searching and finding solutions for problems. Because of this

process, the qualitative experiment suits the new production of knowledge. With this production, practitioners receive a benefit from the research process itself while developing innovations for their daily life and researchers gain data to discover the structure and conditionality of social relations in problem-solving processes. This data needs to be analyzed by researchers to produce general knowledge about the process of creating social innovations.

The analysis of the qualitative experiment is based on the 100% rule as it is described under the qualitative-heuristic methodology (chapter 3). According to this rule, the analysis of the qualitative experiment, is only concluded when the described relations no longer show any contradictions. Kleining shows two ways for researchers to discover the structure of a research object. One way is to do it together with the concerned practitioners during their daily life. The other option is to do a textual analysis based on the research minutes together with an interpretation group that consists of other researchers. Both options, according to Kleining, lead to valid results.

Finally, it is important to note that in the qualitative experiment, researchers act as external participants and are able to use the described strategies and techniques to discover the structure of such a process. This means that concerned practitioners – as organizational-internal participants – are not able to utilize the strategies and techniques on their own. Because the practitioners are too involved in the problem, the qualitative experiment requires the support of the researchers, plus interaction and dialogue between the two.

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## 5. Conclusion

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In this discussion I present two methodologies that are well-suited for innovation research. While the description of the grounded theory was briefly addressed and Kehrbaum's idea for researching social processes in innovation research also mentioned, the description of the qualitative-heuristic methodology was detailed and focused for the purpose of examining problem-solving processes in organizations. Even though researchers are able to examine social processes with both methodologies and their methods, there are differences between them. There is, however, a greater benefit to using the qualitative-heuristic methodology and its qualitative experiment as a participating method in innovation research.

I have shown that researchers are able to discover structures of social processes. I have also indicated that the most effective research process can be achieved by obtaining qualitative data, by following the rules of the qualitative-heuristic methodology that is based on permanent dialogue, and interaction of the researcher with members of the research field. The qualitative experiment enables researchers to initiate action-orientated processes as shown in the fictional example of the workplace kitchen in an organization. While Kehrbaum

already uses the grounded theory in innovation research, the qualitative experiment is currently not in use. Kleinig points out that the qualitative experiment is not just a method to observe the field, as researchers do by following the grounded theory methodology. Instead, the qualitative experiment initiates interactions and reflections in the field by its strategies and techniques. It enlarges the pragmatic perspective, as Hutter et al. describe it.

By using the qualitative experiment, researchers are required to be in a permanent reflective process about ethics. Its strategies and techniques must not be misused, as they risk destroying social processes in the field. Therefore, Kleinig highlights the protection of social processes in the research field as one of the most important concerns of researchers. With this in mind, utilizing the qualitative experiment as a research design is still missing a comprehensive approach to ethical aspects. As indicated, the qualitative-heuristic methodology matches ethic rules according to Kiegelmann. While researchers choose this methodology as the approach for their research they follow its rules, particularly ethical rules. As seen in the kitchen example for the qualitative experiment, researchers can use the kitchen door to interact with practitioners. There we learned researchers must be cautious with their actions as even “small” irritations in the daily life of practitioners may reveal social processes and enable researchers to generate qualitative data.

Additionally, managers, supervisors, and employees of organizations need to be convinced that this method is relevant and beneficial for the organization and does not destroy its social processes of searching and finding solutions for existing problems. It is difficult to convince practitioners to participate in a qualitative experiment because its strategies and techniques are challenging to members of the organization in their daily lives. The benefit of the qualitative experiment for an organization lies in irritating the field with interventions by the researcher. Researchers can discover the structure of problem-solving processes by such interventions and by observing the action of the practitioners that follows the intervention. From the perspective of the researcher, success is achieved if the practitioners break out of their routine and “leaves their beaten path” (Latour 1998, cited in Rammert 2010, 11). During this process, the implicit strategies for searching and finding a solution for a problem become explicit. To understand the value of the qualitative experiment, practitioners need to see that a collaboration with a researcher who participates in their problem-solving process leads to an improvement of their strategies of searching and finding a solution. By participating, researchers are able to relate to the perspectives of practitioners during their daily life and to cluster and explain them with such an understanding. This gives more insights for practitioners about their strategies for searching and finding a solution than descriptions can do which they would have to transfer to their daily life themselves. Another value of the qualitative experiment is that researchers do not enter the research field with a hypothesis that they want to verify or falsify. Instead, researchers

are surprised by new insights in order to discover structures of problem-solving processes. Referring to the example, it might be possible that an exchange between the members of an organization in a workplace kitchen is not a condition for a problem-solving process but there might be other arenas where such an exchange is the foundation for developing social innovation. This shows that researchers must be open minded in order to gather and analyze data about the conditions for such processes.

As a result of participating methods in innovation research, an action-oriented approach depends on the research field. Topic choice, research-design and end-use (Nowotny et al., 187) come up during the research process and cannot be decided before the research process. As I have pointed out referring to Wolff (2010) researchers are able to enter an organization more easily when the research method and goal are not clear at the beginning of the research. Furthermore, Wolff suggests starting the research even though research parameters are unclear. The rules of the qualitative-heuristic methodology enable researchers to deal with such unclear conditions, because researchers must be open-minded about the research object and their field of study. According to the rules of this methodology, they are required to appropriate their methods, strategies, and techniques to the conditions of the research object and the social processes. More importantly, the interest of researchers is more about the structure of developing social innovations and less on the topic-choice of the field.

Because of these key findings I conclude that the qualitative experiment as a participating method based on the qualitative-heuristic methodology is best suited for innovation research in organizational contexts to discover the conditions for and the structure of social processes to improve the strategies of searching and finding solutions for problems that present potential opportunities for social innovation.

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