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Abduction as the type of inference that characterizes the development of a grounded theory

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ABSTRACT In this article, abduction is introduced in relation to theorizing in grounded theory. Theoretical insights are inevitable cornerstones of the development of a grounded theory and abduction is worked out as a type of inference that characterizes this development. How abduction could be used in grounded theorizing is shown in a grounded theory research on ‘organizing doubt’, i.e. the way Dutch army units are formed with self-organizing capabilities that can be deployed during crisis operations. The authors show that two concepts from organizational theory that are central in this grounded theory’s analytical framework – i.e. ‘dynamic complexity’ and ‘self-organization’ – are developed and embedded in a substantive theory on ‘organizing doubt’ by abductive reasoning.

KEYWORDS: abduction, grounded theory, organizational design, qualitative research, military organizations

Introduction

In 1968, the grounded theory (GT) approach was introduced as a type of qualitative research to ‘uncover and understand what lies behind phenomenon about which little is known’ (Strauss and Corbin, 1990: 19). After 1968, many publications about this approach have addressed its underlying and operational logic and, most of all, its (differences in) procedures (Glaser, 1978, 1992; Glaser and Strauss, 1967; Straus and Corbin, 1990; Wester and Peters, 2004). At the same time, the use and usefulness of theory in GT research became an important issue and revealed one of the most famous misunderstandings – that GT researchers use an inductivist strategy – that is, GT researchers need an empty head in order to theorize in the required way, a head devoid of any theoretical concepts that can possibly blur the unprejudiced observations towards the field of research (Kelle, 1995: 41).
At the end of the 1980s and early 1990s, however, this misconception was further cleared up by the introduction of the specific use of theoretical knowledge and coding paradigms in order to develop descriptions into theoretical abstractions (Strauss, 1987; Strauss and Corbin, 1990). Strauss (1987: 162) stated that:

A general rule of thumb, then, when one is flooded with experiential data, is to get distance from them by raising theoretically oriented questions about items in the data, possibly evenly selecting one such question and focusing the usual kind of analysis around it. One looks at it, in terms of categories, thinking in terms of hypotheses about possibly relevant conditions, consequences, etc.

In this context, Strauss (1987: 11–12) explicitly referred to processes of induction, deduction and verification. Despite Strauss’ clear notes on induction, deduction and verification, the specific use of theory in GT research gave way to speculations of a fundamental schism between Glaser and Strauss, the founding fathers of GT. Apparently, two variants of grounded theorizing would exist: on the one hand Glaser’s ‘emerging’ variant that focuses on openness and creativity followed by the emergence of a theory, and on the other hand Strauss’ ‘forcing’ variant, which stresses the deliberate development of theoretical insights by using explicit coding paradigms and procedures in which the role of theory seems to be clear (Smaling, 2004: 16). Yet, once again, speculations on this antagonism were based on misconceptions of the process of grounded theorizing given the fact that the explicit use of theory in GT had become rather obvious (Charmaz and Mitchell, 2001; Strauss, 1987). Nevertheless, a critic argued that GT developments showed a shift from an open-ended to a deterministic positivistic stand that restrains GT researchers to be open-minded and receptive and, as a result, subverts discovering the depth and fullness of the studied reality (Charmaz and Mitchell, 2001). Following Charmaz (2000), Clarke (2005: xxiii), in her recent work, seeks to ‘reclaim these tools from their positivist underpinnings to form a revised, more open-ended practice of GT that stresses its emergent, constructivist elements’.

The question here is how to encourage the proper use of existing theoretical ideas on GT within these developments in the sense that these ideas contribute to a meaningful story of the phenomena under study. To make grounded theorizing visible and to keep it flexible and heuristic, we will discuss the mechanism of abduction as a means of grounded theorizing (Coffey and Atkinson, 1996; Kelle, 1995). The special benefit of abduction in grounded theorizing is that it helps:

... to explain new and surprising empirical data through the elaboration, modification, or combination of pre-existing concepts. Within this context, the theoretical knowledge and pre-conceptions of the researcher must not be omitted. Nevertheless, this knowledge can be used much more flexibly than with hypothetically-deductive research: theoretical knowledge and pre-conceptions serve as heuristic tools for the construction of concepts which are elaborated and modified on the basis of empirical data. (Kelle, 1995: 34)
We will not introduce a new procedure or contribute to new mechanistic thinking in GT. On the contrary, it is our aim to show how abductive inferences may contribute to creative thinking using explicit theoretical insights that have been used before, in order to improve the correspondence between the reports GT researchers write, and to understanding the experiences of people and social phenomena in social reality.

What is abduction?

Abduction (or retroduction), introduced by the American philosopher C.S. Peirce, refers to the process of studying facts and devising a theory to explain them (Cunningham, 1998: 833). The words abduction and retroduction have the same meaning and are interchangeably used in literature (Emery and Emery, 1997). Peirce is known as the founding father of pragmatism and his concept abduction occupies a distinctive role in his conceptualization of pragmatism. Abduction is brought forward by Peirce as a type of inference to be distinguished from both induction and deduction, and focused at finding explanations for observed facts. These explanations are hypothetical referring to: 'Any proposition added to observed facts, tending to make them applicable in any way to other circumstances than those under which they are observed' (Peirce, 1955: 150). Abduction is the process by which useful explanations are developed and is therefore an essential concept within pragmatism. This process of finding useful explanations is essentially 'an inference' from observed facts.

The specific nature of abduction can best be explained by showing the way it differs from both deduction and induction. The method of deduction is applying general rules to specific cases. Formally, this style of reasoning looks as follows:

Rule. – [It is true that] All the beans from this bag are white.
Case. – [We know that] These beans are from this bag.
Result. – [Certainly, it is true that] These beans are white. (Shank, 1998: 847)

The traditional counterpart of deduction is induction. Formally, this type of reasoning looks as follows:

Case. – [We know that] These beans are from this bag.
Result. – [We have observed that] These beans are white.
Rule. – [Probably, then] All the beans from this bag are white. (Shank, 1998: 847)

It might be claimed that a quantitative example is out of place when discussing qualitative research. The reason we chose to discuss induction using the example of the beans is that the example of the beans is extensively discussed by Peirce in his paper ‘The Probability of Induction’ (1955: 174–89). Induction is the inferior counterpart of deduction, because it always leads to conclusions that are only probable (Shank, 1998: 845). It is orientated at finding statistical generalizations (a number of observations lead to conclusions...
about the way the world works) (Emery and Emery, 1997: 120). Abduction was originally meant by Peirce for capturing the nature of scientific progress (finding new explanations for phenomena). Cunningham (1998: 833) quotes Peirce claiming that: ‘All the ideas of science come to it by way of abduction’. Formally this logic looks as follows:

Result. – [We have the experience that] The beans are white [but this experience lacks any real meaning for us].

Rule. – [The claim that] All the beans from this bag are white [is meaningful in this setting].

Case – [Therefore, it is both plausible and meaningful to hypothesize that] These beans are from this bag. (Shank, 1998: 847)

One can see that a new idea or a hypothesis (these beans are from this bag) is added to two ‘givens’ (the rule and the result). According to Cunningham (1998: 833–4), abduction is the appropriate method for making sense of new (or unknown) situations. According to Bateson (2002: 134), abduction is important because ‘all thought would be totally impossible in a universe in which abduction was not expectable’. It should be noted that Peirce did not want to banish the concepts of deduction and induction and replace them by abduction. Abduction, induction and deduction refer to different stages of inquiry.

**What is the status of abduction within the GT approach?**

Within the GT approach, the importance of abduction has been recognized by Coffey and Atkinson (1996: 155) stating that ‘abductive reasoning lies at the heart of “grounded theorizing”’. Furthermore, they claim that:

> Our important ideas are not ‘in’ the data, and however hard we work, we will not find those ideas simply by scrutinizing our data ever more obsessively. We need to work at analysis and theorizing, and we need to do the intellectual, imaginative work of ideas in parallel to the other tasks of data management.

Thus, abduction is a type of inference that operates ‘bottom up’: individual facts are collected and connected together in order to develop hypotheses. The particular is the starting point (Coffey and Atkinson, 1996). Perhaps it seems that theory has no place in such an approach. However, Coffey and Atkinson (1996: 157) emphasize that formal theory is not ‘forbidden’ in such an approach:

> ...we can also recognize that theories usefully can be thought of as heuristic tools. In other words, we use concepts, theories and ideas constructively and creatively...

> Regularities in data – whether of form or content – must be associated with ideas that go beyond those data themselves.

In fact, the process of associating data with ideas is abduction, and what Coffey and Atkinson stress is that existing theory can be used as a tool to
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develop such ideas. Similarly, Kelle (1995: 41) argues that, although the general sentiment within the GT approach is against using theoretical concepts for analysing the empirical world, ‘an open mind does not mean an empty head’. Coffey and Atkinson and Kelle all argue that theoretical insights can function as heuristic tools in the process of developing hypotheses, i.e. in developing a GT.

This article will show how this idea of abduction was consciously used in the process of developing a GT. The study we are referring to is documented in Organizing Doubt. Self-organization and Army units in Crisis-Operations (Kramer, 2004). Shedding more light on the methodological issues of this study, below, we should clarify the following points:

1. The process of developing a GT should be understood as a continuing process of developing hypotheses about a field of study.
2. This process of developing hypotheses is based on abduction.
3. During the process of developing hypotheses, an analytical framework occupies a central role.
4. The analytical framework consists of theoretical notions from which hypotheses are developed.

Background of the study ‘Organizing Doubt’

The study ‘Organizing Doubt’ is part of a larger research project entitled ‘Junior Leadership in Circumstances of Crisis’ (JLCC) of the Social Science Department of the Royal Netherlands Military Academy (RNLMA). This project started with the involvement of the Dutch Armed Forces in former Yugoslavia in peace operations before and after the Dayton Peace Agreements in 1995 as part of a United Nations (UN) and North Atlantic Treaty Organization (NATO) intervention. Involvement in such operations was, partly, the result of a change in military strategy in the Netherlands from a ‘cold war military strategy’ to ‘modern military action’ as a consequence of the East–West détente in 1990 (Ministerie van Defensie, 1992). Peace operations involve a range of military operations under UN or NATO responsibilities in certain regions in the world, such as conflict prevention, humanitarian actions, peace-keeping, peace-building, peace-restoring and peace-enforcement (Ministerie van Defensie, 2002). One of the largest and most extensive operations the Netherlands were involved in were the contributions to the peace operations in former Yugoslavia. In 1992, the Dutch contribution started with Logtb (Logistic battalion) and, some time later, in 1993, with Dutchbat (Dutch battalion) as part of the UNPROFOR operation.3 From 1996 until now, the Netherlands also contributed to IFOR (Implementation FORCE) and SFOR (Stabilization FORCE) operations in the same region.4 Two aspects of these peace operations were of major interest to start a project on JLCC at the RNLMA.

The reason the JLCC project was set up was, mainly, because of the lack of knowledge regarding the dynamics of the context of the operations in former
Yugoslavia in the first part of the 1990s. The project defined the context of these operations as ‘a circumstance of crisis’, and its goal was to explore and define the meaning of this context during the project. Another reason the project was significant was that the group- and platoon-level leaders of Dutchbat and Logtbat were mostly young lieutenants who had just finished their education at the RNLMA, but little was known by military leaders or military researchers about the experiences of such junior military leaders at the ‘shop floor level’ in military peace operations.

This lack of practical and theoretical knowledge challenged social scientists at the RNLMA to study the experiences of these junior leaders. The following central questions were formulated at the onset of the project (Vogelaar et al., 1997):

1. Which problem situations are junior leaders in crisis circumstances confronted with?
2. How do they experience these problem situations?
3. How do they act in these problem situations?
4. In which way are their actions effective?
5. Which lessons can be drawn from the experiences and actions of junior leaders in crisis circumstances?

The questions above reflect the lack of practical and theoretical knowledge of the everyday life of junior leaders in crisis circumstances and ask for an approach that could realize this knowledge. The researchers chose the GT approach and the elaboration of these ideas in a four-phase model for developing GT, i.e. the exploration phase, the specification phase, the reduction phase and the integration phase (Wester and Peters, 2004). The research project started with two case studies (Dutchbat and Logtbat), while a third case (SFOR) was added later. The criterion for selecting these cases was quite straightforward: Logtbat, Dutchbat and SFOR consisted of a larger, integral unit, and the peace operations were conducted in a context that was a ‘crisis environment’.

Below we describe the different phases of the JLCC project by drawing upon the study of Kramer (2004). Besides informing the reader about the research activities in the JLCC study, we will reflect on these activities in more theoretical and methodological terms.

**Exploration and specification**

**EXPLORATION PHASE**

The exploration phase is aimed at becoming acquainted with the field of study and at the development of an analytical framework (Wester and Peters, 2004). JLCC started with two exploratory case studies whose goal it was to develop insight into the nature of the experiences of the soldiers who had been deployed in peace operations. During this phase, Kramer (2004: 16) reports the following activities by the project group:
• Research questions for the exploratory cases were formulated (see earlier).
• Soldiers from various ranks (from private to lieutenant-colonel) of Dutchbat and Logtbatt were individually interviewed after their return to the Netherlands. In the open interviews, the respondents reflected upon their time in Bosnia on the basis of the leading questions of the research project.
• The material was transcribed into interview protocols.
• In group discussion, the researchers developed a system of categories on the basis of the Dutchbat interviews as a reflection of the experiences described in these interviews. These categories referred to general ‘problem situations’ of junior leaders and the way they dealt with these (‘dealing with danger’, ‘dealing with shortages of supplies’, etc.).

Reflecting on these activities, we may conclude that, yet, while no real analytical framework was developed, data on the issue of the study were gathered and codes and categories were developed by ‘open coding’ of interviews.

THE SPECIFICATION PHASE
The specification phase is more aimed at the analysis of material than at gathering material (Wester and Peters, 2004). Kramer (2004: 17) described the following activities and results in this phase.

After the system of categories had been developed, the material was subsequently analysed by using these as sensitizing concepts (‘selective coding’). On the basis of this analysis and after a member check, a first exploratory case study (Dutchbat) was published as a research paper (Vogelaar et al., 1996a). After this publication, the Logtbatt case was worked out. Additional interviews were conducted with aspects of the category system as a topic list and the transcribed interviews were analysed using KWALITAN (KW ALItatieve ANalyse, Dutch for Qualitative Analysis) (Wester and Peters, 2004). After a member check, the second case study was published as a research paper (Vogelaar et al., 1996b). After both exploratory case studies were completed and published as research papers, they were published together in a book publication (Vogelaar et al., 1997). At a later stage in the exploration phase, a third case study was worked out. This case concentrated on a particular SFOR rotation. The methodological procedure used earlier in the specification phase – topic-guided interviews with members of different ranks in the organization and selective coding using the developed system of categories and KWALITAN – was also used in the SFOR case. Eventually, again after a member check, this resulted in a third research paper (Vogelaar et al., 2001).

Reflecting on the case studies and the results of these in the publications, we may conclude that essentially the research papers, as well as the book publication, contain descriptions of problems of junior leaders in circumstances of crisis and the way they tried to solve these problems. Although the experiences were categorized and described in groups of typical problems that junior leaders experienced, the emphasis of the case studies so far was on recording experiences. As such, the case studies provided broad insight into the everyday
affairs at the operational level such as confrontations with stress, different cultures, danger, international cooperation, the home front, accidents, etc., but the researchers did not systematically use theoretical sampling and constant comparison to put these experiences into a theoretical perspective. What is interesting is that in the epilogue of the book publication (Vogelaar et al., 1997) an attempt was made to find the common thread in the conditions of the operations (‘the crisis circumstances’). This was done by using the classification of McCaskey (1982), which describes characters of uncertain and ambiguous situations in theory.

Reduction and integration

It became clear that the experiences themselves allowed further analysis. To do so, the researchers needed a system of sensitizing concepts to reflect upon the experiences of junior leaders. Furthermore, it became clear that the main characteristic of the junior leaders’ operational environment needed further elaboration to understand the core processes of their everyday actions. The simultaneous analysis of basic social processes and environmental characteristics, which may be referred to as ‘thick analysis’ (Clarke, 2005: xviii), might help to accomplish the analysis beyond the limitations of the exploratory and specification phase into the reduction and integration phase. This was the goal of the study of Kramer (2004).

Reduction Phase

In the reduction phase, the emphasis is on explicating the core of a study (Wester and Peters, 2004). In the GT approach, such theory is called ‘substantive theory’ because it is orientated at the field of study. The core of the GT is represented by what are called core concepts, concepts that characterize central processes in the field of study (Wester and Peters, 2004) related to characteristics of the situation (Clarke, 2005). Identifying and developing such concepts is one of the main activities in the reduction phase and the following activities were reported by Kramer (2004) to do so.

From the case studies, it became clear that junior leaders were confronted with everyday issues such as stress, dealing with different cultures, danger, international cooperation, the home front, accidents, etc., in crisis operations. Such issues also indicate that they are dealing with a problematic environment, the problem of (re)construction of this environment and the organizational issue of dealing with it. The difficulty of dealing with these problematic environments is based on everyday ideas and everyday structures that junior leaders recognize in the environments and this possesses a certain ‘abstract structure’ (Kramer, 2004: 19). He mentions, for example, that the indeterminate nature could be interpreted as the main characteristic of the junior leaders’ operational environment (Kramer, 2004: 19–21). To look for the ‘abstract structure’, Kramer (2004) uses organizational literature (Reed,
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1999; Senge, 1992; Weick, 1979, 1995) in which the problem of dealing with a problematic environment mainly refers to the problematic environment itself that organizations are confronted with. From this literature, the concept of ‘dynamic complexity’ was introduced by Kramer as a core concept to develop further insight into the issue of dealing with a problematic environment by junior leaders. The concept of ‘dynamic complexity’ is a general term for different ways in which an environment can be ‘problematic’ and ‘indeterminate’: ‘Dynamic complexity is therefore the result from the interaction of purposeful behavior of a system in an uncertain ambiguous, equivocal but reactive environment’ (Kramer, 2004: 73). The dynamically complex environment can be understood as the indeterminate nature as a main characteristic of the environment junior leaders are confronted with and, at the same time, as an environment that confronts these leaders with a necessity to act. For example, the convoys of Logtbat were confronted with dangerous situations such as shootings that had to be addressed.

Reflecting on Kramer’s activities, we can conclude that the concept ‘dynamic complexity’ is orientated at rather abstract characteristics of the environment of junior leaders in military units, i.e. crisis operations. These abstract characteristics can be determined behind everyday issues junior leaders in operational units are dealing with and are suggested to be a general characteristic crisis. Therefore, its relevance for future operations can be argued.7

INTEGRATION PHASE

In the integration phase, core concepts are used to develop a substantive theory about the field of study (Wester and Peters, 2004). Kramer interpreted this activity as follows.

To explain the choice of ‘dynamic complexity’ as a core concept, Kramer had to work out two central issues:

1. What does the choice of dynamic complexity as a core concept theoretically mean for the units that are (to be) engaged in crisis operations?
2. What are the theoretical implications for taking dynamic complexity as a core concept for the central issues at stake in the JLCC project?

Kramer (2004: 25–7) states that the first question implies that, if units are confronted with dynamic complexity, in theory they then may be confronted with problems for which no clear-cut rules or procedures are available. He adds that not all situations that are not open to rule-governed action are necessarily dynamically complex, nor are they all uncertain or dangerous. After all, dynamic complexity results from the interaction between a purposeful system with a problematic environment. In a sense, the ambition of an organizational system makes the environment dynamically complex. Following Weick (1979) that rules can be useful to develop a workable level of certainty, Kramer (2004: 26) adds that:
... due to the elementary nature of dynamic complexity, rules cannot transform all uncertainties into certainties. This implies that it is impossible to design a rules system that makes dealing with complexity a job of mere rule following.

On the other hand, Kramer states, a system like an operational unit should not act totally at random. An organization that is confronted with dynamic complexity should, in order to act ‘meaningfully’, advance beyond the level of intuitive behaviour and, ‘The consequence of this is that dealing with complexity necessitates thinking instead of rule-following’ (Kramer (2004: 27). Subsequently, Kramer states that (2004: 80):

... between the two extremes of perfect rationality (a totalitarian system of rules) and perfect irrationality (no rules whatsoever) there exists a third option: the level of hypotheses.... Meaningful action can therefore be described ‘as acting on the basis of hypotheses’, which implies acting on the basis of fallible, partial, and preliminary knowledge of the environment.

Kramer uses Weick’s (1979) ‘organizing model’ to describe the dynamics in dealing with dynamic complexity and to explain how a system can deal with dynamic complexity in the best possible way. It follows from Weick’s organizing model that a system should deal with dynamic complexity by sense making (building up knowledge about the environment) and sense discrediting (doubting existing insights). Kramer concludes from this that the concept ‘doubt’ is the normative element in Weick’s organizing model. Subsequently, Kramer concludes that doubt is an essential capability that should be ‘organized’ (2004: 88): ‘doubt is considered to be a crucial process that organizations need to organize in order to deal with dynamic complexity in the best possible way’.

To reflect on Kramer’s reasoning, we can conclude that he considers the concept of ‘perfect rationality’ as an impossible way to deal with dynamic complex circumstances and, from here, he argues that dynamic complexity is dealt with by using hypotheses (previous insight influences subsequent action). Therefore, dynamic complexity is developed by Kramer into a concept that describes how hypotheses are developed (results of actions influence the development of hypotheses). The theoretical notions on dynamic complexity developed in the reduction and integration phase were necessary for Kramer to develop an analytical framework on junior leaders in military units in crisis operations more sophisticatedly. We will reflect on this issue in the next section.

The central design issue

An important theoretical consequence Kramer took of theorizing around dynamic complexity was that operational units possess a particular degree of ‘natural’ autonomy. Autonomy as a sensitizing concept is defined here as ‘freedom that exists to deal with problems’ (Kramer, 2004: 27). This definition indicates that a system possesses certain degrees of freedom in reacting to the environment (De Sitter, 2000: 72). Consequently, both the crisis organization
and the mother organization (the Army in the Dutch Ministry of Defence), Kramer argues, do not have absolute control over the operational units.\textsuperscript{11} As a consequence, the Army as an actor in such environments is confronted with different problems (Kramer, 2004: 27):

1. The operators in the operational units (soldiers at the shop-floor) are confronted with the need to act meaningfully (one certainly does not want them to act randomly). Meaningful action refers to the fact that units need to be able to react sensibly to the challenges of their environment without there being a set of prescriptive rules that can be applied straightforwardly.

2. The larger crisis organization is confronted with the problem that they need to design and control units that are confronted with such an environment.

3. The mother organization is presented with the problem that it needs to be able to design crisis organizations and operational units that can deal with such environments. If the Army engages in circumstances in which it cannot control its operational units in an absolute way, it should design units that can deal with this natural autonomy in a sensible way: if the environment necessitates thinking, then operators should be able to think.

Because of the inevitability of autonomy of operational units in dealing with dynamic complexity, the concept of ‘self-organization’ becomes another central concept in Kramer’s (2004) study. To develop the concept of ‘self-organization’, theoretical notions were taken from the socio-technical approach, which uses this concept to describe the crucial qualities of self-managing work groups (Kuipers, 1989; Kuipers and Van Amelsvoort, 1990; Morgan, 1997). From this literature, Kramer concludes that ‘doubt’ is central to the concept of self-organization (Kramer, 2004: 133–4), allowing him to use indicators from sociotechnical theory to analyse the cases again. From this analysis he concludes that, in order to deal with the dynamic complex environment, the Army should be concerned with creating operational units that are able to ‘organize doubt’ in the best possible way (Kramer, 2004: 27–8). This means that the Army should be concerned with designing operational units capable of self-organization, i.e., the Army should equip the units in such a way to enhance the possibilities of self-organization. Kramer states that the design issue is supposed to be located at the level of the crisis-organization (which directly designs operational units, i.e. Logtbat) and the mother organization (which provides the prerequisites for the crisis organization, i.e. the Army in the Netherlands). The capability of designing such units marks one of the most crucial qualities of an Army organization as an organization that is serious about performing a certain type of mission.

Reflecting on Kramer’s arguments, we may conclude that the line of Kramer’s reasoning here is based on theoretical inferences in a sense that his theoretical line of reasoning possesses a deductive structure: if the environment is dynamically complex, then behaviour of units cannot be totally rule-governed, have no absolute control, hence possess natural autonomy.\textsuperscript{12} Consequently, it is important that units are willing and able to doubt. It is, therefore, not surprising that the design issue has been taken up in the analytical
framework in the integration phase. Given this analytical framework, the underlying goal to work out this framework into a substantive theory became:

Developing insight into the ability of the Army to deploy units that are able to deal with dynamic complexity in peace operations. This insight was developed by:

1. Analyzing the way in which the design of the operational units in the cases influenced their ability to deal with dynamic complexity;

2. Reconstructing the influence of the mother organization on the design options of crisis organizations (Kramer, 2004: 29).

The structure of the substantive theory that was developed is represented by Kramer as follows (2004: 31):

Abduction in ‘Organizing Doubt’

So far, we have shown that Kramer was able to develop an analytical framework on ‘organizing doubt’ of operational units through which junior leaders deal with crisis circumstances. We will reflect on this development in terms of abduction in this section.

It became clear that Kramer made a step from the actual dealing with dynamic complexity at the operational level to design issues located at higher organizational levels. The design issues, however, such as they were stated, were inferred from fundamental characteristics of dealing with dynamic complexity, such as they are known in theory. The substantive theory was developed by ‘working backwards’. Note that the phrase ‘retroduction’, which is sometimes used instead of abduction, refers to the characteristic aspect of ‘working backwards’ (Emery and Emery, 1997). The original case descriptions are the starting point. Subsequently, the design of the operational units was reconstructed from the case descriptions followed by reconstructing how these characteristics influenced the ability of the operational units to deal with their operational problems. This last step is important because it offers a means to move beyond the local descriptions in the case studies to insights that are more generally valid.

In a next step, it was analysed whether structural (meaning ‘stable’) characteristics of the mother organization (the Army) influenced the possibilities of
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The development of crisis organizations to design operational units with the required capability to deal with dynamic complexity. This step implies that the abilities of the crisis organization to design units with the capability to deal with dynamic complexity in the best possible way are problemized. This step is important because it is a way to make the experiences in the case studies useful for the Army in its development as a crisis organization. Theoretical tools are necessary to analyse the cases and to analyse the characteristics of the mother organizations on this point. Essential is that rather complicated theoretical issues had to be dealt with and theory was used to develop the central question. Apparently, theoretical knowledge was necessary in order to be able to ask the right questions in the first place. Hence, the focus of the study was essentially explorative. The study was orientated to deal with issues about which little was known (finding ways to develop the Army as a crisis organization).

Discussion

In this article, we showed that the development of an analytical framework, for the Kramer (2004) study, had truly been a study in itself. Identifying the required elements, finding the proper theoretical elements and connecting the elements together proved to be a complicated and very time-consuming activity (Kramer, 2004: 41). The experience of this study shows, therefore, that theoretical development is an essential condition to develop a substantive theory. In other words, before results are analysed, the researcher needs to develop the required way of thinking. This article has aimed tries at clarifying that the process of developing a GT is explained to be based on abduction rather than deduction or induction. The description in the previous sections should have made these points clear. In the following section two controversial issues that result from this description are singled out and discussed.

Theory and the Development of GT

The two central issues of the study described earlier are significantly related. The relationship could be formulated as follows: because the development of GT is based on abduction, the role of theory in this process is not problematic. In order to support this claim, we should go back to the original reasons why the role of theory was controversial. GT researchers are often expected to cultivate an empty head because the unique situations that are of interest should be engaged in an unbiased way. The fear is that theory is used in order to judge the specific on the basis of general rules (i.e. theory is used in a deductive way). Cultivating an empty head in GT is, as we have shown, simply impossible because the process of the development of GT is similar to abduction in which theory is not used in a deductive way. Theory is used here, as Gustavsen (1996) would say, as a tool to give meaning to experiences and to provide reference points for learning. Of course, it is possible to use theory in such a way that indeed 'the truth is settled beforehand' or in such a way that the theorist is not...
really open to the unique. This is, however, in our view not an incorrect application of methodological principles of the use of theory, but simply errors of the individual researcher.

THE STRUCTURED NATURE OF THE UNIQUE
For some grounded theorists, it is doubtful that ‘general insights’ (i.e. theory) are necessary, which probably explains the controversial status of formal theory within the area of GT. Perhaps for these grounded theorists the attention on the local and the unique – which is typical of the GT approach – seems to have been slowly shifted to characteristics that are not local and unique. The choice for dynamic complexity as a core concept, for example, can be interpreted as an implicit choice to model the unique experiences in a certain way. It is assumed that dynamic complexity is only relevant as a general insight to understand the specific situations, and it is assumed that the local and unique situation can only be structured by applying the concept of dynamic complexity.

Using the concept of dynamic complexity, two points must be emphasized. In the first place, the emphasis on the unique nature of problems and local circumstances is the essence of the concept dynamic complexity: problems with which operators are confronted cannot be dealt with on the basis of a closed system of rules. Therefore, the unique nature of local circumstances is therefore taken as the most crucial assumption underlying the present study, and it is assumed that some organizational systems are better able to deal with such situations than others. In the analytical framework, attention is therefore focused on the characteristics (which are stable in different circumstances) of the organizational system that needs to deal with such unique problems. The study consequently did not directly criticize the way specific problems (roadblocks) were dealt with. In the second place, the relevance of the study is that it could help the Army in its development as a crisis organization. If the conclusion of the study had been ‘every situation is unique, there is nothing we can do beforehand’, the Army would have been condemned to apathy regarding this essential feature of their operations. The aim to draw normative conclusions regarding the capabilities of the Army points to a pragmatist orientation on theory: theory is applied because it is considered to be useful.

NOTES
1. Kelle (1995: 37) describes the contradiction between Glaser and Strauss as follows: ‘Strauss has recently taken a more liberal position concerning the role of literature in the research process than in their first book: “All kinds of literature can be used before a research study is begun (Strauss and Corbin 1990: 56)”’. Strauss’ new approach has been totally repudiated by Glaser... Consequently he regards any review of literature related to the substantive area under study as harmful to the process, for it can “contaminate, be constrained by, inhibit or otherwise impede the researchers effort to generate categories ... that truly fit, are relevant and work with received or preconceived concepts... (Glaser, 1992: 31)”.'
2. For further elaboration on Peirce and pragmatism, see Kramer (2004) and Rescher (2000).
3. Dutchbat is a battalion of the Air Maneuver Brigade (AMB), an infantry battalion supported by Air Force capacity, and Logbat is a transport battalion for transporting humanitarian goods.
4. Apart from these operations, the Netherlands contributed to the NATO operation in Kosovo (KFOR) in the same region (Klep and Van Gils, 1999).
5. For the Dutchbat case 18 people, and for the Logbat case 28 people, were interviewed.
6. For the SFOR case, 26 respondents were interviewed.
7. Kramer (2004: 20) underlines that not all practical problems units are confronted with involve dealing with dynamic complexity: some practical problems can be dealt with on the basis of rules. Military organizations develop and extensively train procedures and formulate rules to deal with such situations, but these are mostly useful to deal with immediate threat. They are not suited to deal with underlying questions like the ones above. Subsequently, practical problems that involve dealing with dynamic complexity are the most important and the most difficult, and therefore the most interesting, as they involve dealing with dynamic complexity. As such, the study was induced by the apparent relevance of an analytical framework around the core concept of ‘dealing with dynamic complexity’ as it appeared from the thick descriptions of the case studies.
8. See Billig (1996) for a justification for this distinction.
9. The concept autonomy originates from general systems theory and is often used in organizational studies. In disciplines such as sociology, a roughly comparable concept ‘disciplinary discretion’ is used to denote the same phenomenon.
10. Kramer (2004: 27): ‘It should be added that in particular ways the autonomy of operational units is limited. In important ways, operational units are dependent upon the organizational context. One could say that operational units, because they are part of a larger organization and because this larger organization is performing a complex operation, possess a “natural lack of autonomy” as well. Although the autonomy of operational units is limited it is, as a consequence of the nature of dynamic complexity, inevitable. This has important consequences for the position of operational units and their necessary competences. De Sitter (2000) would call them, therefore “semi-autonomous”’.
11. Although the idea of total control might be considered an impossibility, it is still an important design ideal in many organizations (Morgan, 1997).
12. Kramer (2004: 27): ‘This argument shows how the organizational context can regain control over operational units: it can turn down its level of ambition. However, it is assumed here that this option is principally impossible for an organization such as the army, as this organization is made for difficult circumstances.’

REFERENCES


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