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DISSERTATION

Titel der Dissertation

Organizational Epistemology: A normative understanding of knowledge in organizations. Philosophical foundations and implications for researchers and practitioners.

Verfasser

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Doktor der Philosophie (Dr. phil.)

Wien, 2012

Studienkennzahl lt. Studienblatt: A 092 296
Dissertationsgebiet lt. Studienblatt: Philosophie
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Abstract

This inquiry presents a theoretical toolkit on the topic of organizational knowledge. It provides concepts (1) to describe knowledge in organizations, and (2) to prescribe the general conditions for successful organizational knowledge creation. It is rooted in philosophical-epistemological reflections on the nature of knowledge and addressed to researchers and practitioners both-alike.

(1) A theory of organizational knowledge is outlined which provides concepts to understand nature, relevance, application, and creation of knowledge in organizations. Departing from a philosophical grounding, knowledge is located within „distinction-making“ on the three levels of „representation“, „meaning“, and „action“. Additionally, the two general types of „propositional knowledge“ (e.g. rules, or routines) and „narrative knowledge“ (e.g. stories, or best practices) are presented. Knowledge creation is summarized as open-ended process („becoming“) which results in temporarily stable outcomes („being“).

(2) Supplementary, a normative theory of „organizational epistemology“ is developed. Driven by epistemological reflections, a view is presented which acknowledges the crucial difference between beliefs and knowledge, between mere organizational distinctions and successful organizational knowledge; a difference which has widely been neglected by organizational studies so far. Drawing from a „social epistemology“ the three guidelines „enabling“, „constraining“, and „reflecting“ are discussed and shifted to organizations. Those guidelines call for an open and reflective space of knowledge creation, aligned with goals and structures of the organization.

Both (1) and (2) are demonstrated along numerous examples, connected to field-studies, and applied to one main use-case at the company „Seven-Eleven Japan“.

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Preface

What is in it for researchers?

This inquiry aims at providing social scientists with theoretical concepts for their empirical work within the domain of organizations in general as well as organizational knowledge in particular. The developed concepts in part I („organizational knowledge“) may be used to interpret and frame empirical results of field studies (e.g. results from interviews, field notes, participatory observations, or artifact analysis). As part I also defines different types and forms of organizational knowledge, it may also guide the construction of research questions and hypotheses.

More practical oriented researchers may draw from the epistemological criteria of organizational knowledge developed in part III („organizational epistemology“). Research which is focused on the evaluation of effectiveness and quality of knowledge creation within a specific organization, is provided with general criteria for successful knowledge creation. These criteria can be compared with the actual situation, and eventually guide recommendations for adaption and (re-)design of the organizational knowledge (creation) environment.

What is in it for practitioners?

This inquiry is also directed towards practitioners dealing with knowledge management (systems), organizational learning processes, or management in general. The developed framework of organizational knowledge (part I) should enable the „reflective practitioner“ to step back and to get a general view on the relation between organizing and knowledge. It should allow to identify and to classify core processes of the organization as knowledge creation and knowledge application activities. Furthermore, it should allow to understand challenges within the organization as epistemic challenges. This could help to develop alternative views and to trigger new solutions.

Similar to the practical oriented researcher, part III may provide the practitioner with a general framework on which (re-)design and restructuring meas-

ures can be based on. This inquiry is clearly an academic work combining theoretical notions from various sources of organizational studies and philosophy. But it is especially the incorporation of philosophical epistemology which brings in a normative stance, i.e. *epistemological criteria* of knowledge creation (vs. mere *epistemic attributes* of organizations). Consequently, such epistemological criteria could support responsible actors in their activities to generate spaces of knowledge creation, both on micro- and macro-levels of the organization.

Acknowledgements

This inquiry has been initially motivated by being a theoretical contribution to a group work about „situated knowledge“ in organizations. I want to thank Susanne Kim and Julia Schuster¹ for their ideas and feedback, and for them being reflection partners in the very beginning of my work on this topic.

Other crucial ideas and valuable input have been provided by discussions at courses which I supervised in the years from 2008 to 2011 at the *Vienna University of Economics* and the *University of Applied Sciences Upper Austria*. Thus, I thank the students who participated at the course „Technologieunterstütztes Lern- und Wissensmanagement“ („technology-supported learning and knowledge management“) in 2008 and 2009 at the *Institute for Information Systems and New Media* (Vienna University of Economics), as well as the students from the course „The shaping of meaning in organizations“ in 2010 and 2011 at the *Faculty for Informatics/Communication/Media* (University of Applied Sciences Upper Austria).

I want to thank J.C. Spender who, with his vast experience on the field of knowledge in organizations and knowledge management, has been an inspiring discussion partner. Related to that, I want to thank the *School of Economics and Management* from *Lund University* (Sweden) where I had the opportunity to spend a research visit in 2009 together with J.C. Spender.

Special thanks to Helen Longino who issued the invitation as „research visitor“ at the *Department of Philosophy at Stanford University* (USA) in 2010. To participate in the scientific discourse at Stanford’s philosophy department was crucial for my understanding of philosophical epistemology. Here I want to thank Facundo M. Alonso, Michael Bratman, and Krista Lawlor for the inspiring environment they provided in their seminars on epistemology. I also want to thank members of the reading group in social epistemology: Marko Ahteensuu, Wes Holliday, Krista Lawlor, Helen Longino, Han Van Wietmarschen, and Joel Velasco.

¹ these and all following listings of names are sorted in alphabetical order

Additionally, I want to thank Charles A. Holloway and John Morgridge from the *Graduate School of Business at Stanford University* whose seminar I was allowed to visit. Moreover, many thanks to Paolo Parigi from Stanford's *Department of Sociology* who allowed me to participate at his graduate seminar „Organizations and Uncertainty“. I also want to thank the people who were inspiring reflection partners and/or who generally supported my stay in the U.S. like Roger Eichorn, Kenneth Gibbs, Andrea Kuduk, Alberto Martin, and Stephan Stiller. The research visit at *Stanford University* would not have been possible without the financial support of the „Stipendienstelle Wien“ and the grant „Kurzfristige Auslandsstipendien (KWA)“ from the *University of Vienna*.

Finally, I want to thank my doctoral supervisor Markus Peschl for getting into this very interdisciplinary topic and for his support at all different levels.

All the time- and resource-consuming work would not have been possible without the support of my family. I want to thank my parents for both moral and financial support. All my thanks and lovings go to Susanne and to my children Lea and Jaron by being patient and by tolerating my absences caused by scientific research visits and other related events.

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Overview and structure of the inquiry

Part I - Organizational Knowledge

Chapter 1 will examine the deeper source of organizing. Put simply, the idea is that to „organize“ is one mode in which humans deal with their world. And humans do not simply face a pre-given world of readymade, external objects. They rather face an open and manifold flux of impressions, a „manifoldness“ which has to be „synthesized“ (Kant, 1781/2003). Humans, as „thrown beings“ (Heidegger, 1927/1962), are obliged to participate in the permanent and never-ending „domestication of being“ (Sloterdijk, 2001). Now, organizing can also be understood as a mode of human world-construction: similar to the individual construction of reality, organizing temporarily stabilizes the streaming of experience. To organize is the attempt to bring order to chaos, to make sense of complex circumstances, and to enable collective action. We will trace the discipline of organizational studies and present supplementing modes of how organizations structure their world. Here, we will discuss organizing as „rationalistic“ vs. „socialized“ concepts. Using „rationalistic concepts“ organizations construct themselves as *formal institutions* by hierarchy, roles, rules (Schreyögg, 2008, p. 11), bureaucracy (Weber, 1947), or „scientific management“ (F. W. Taylor, 1998 [1911]). Using „socialized concepts“ organizations construct themselves as *social practices* by informal structures (Schreyögg, 2008, p. 47), communities (Brown & Duguid, 1991), culture (Dietrich, 2001; Schein, 1992; Smircich, 1983), or narratives (Orr, 1996).

Chapter 2 tries to define *knowledge* as the driving force behind those organizational concepts. First, we will develop a view which sees knowledge as something which generally constitutes the „epistemological dimension of a social field“ because it enables actors to make distinctions in order to understand their world and to act in it (Bourdieu, 1986; Giddens, 2008). Second, we will apply this „strong sense of knowledge“ to organizations and outline different levels on which organizational knowledge enables organizational distinction-making. Knowledge is then seen not as mere resource of the organization, but as fundamental process which is recurrently created and applied by organiza-

tional actors. The latter create organizational distinctions on three levels, i.e. as *representations* (the syntactic dimension), *meaning* (the semantic dimension), and as relation to *action* (the pragmatic dimension). These three levels of distinction-making will be derived from a connection of the knowledge management triad „data-information-knowledge“ (Boisot, 1995; Nonaka & Takeuchi, 1995; Probst, Raub, & Romhardt, 2002) with semiotics (Morris, 1946; Peirce, 1913; Saussure, 1959).

Chapter 3 will supplement those three levels of organizational distinction-making with two types of organizational knowledge mirroring the two paradigms of „rationalized“ and „socialized“ concepts: (a) „propositional knowledge“ like formal rules, roles, and routines; and (b) „narrative knowledge“ like stories, anecdotes, best-, or worst-practices (Tsoukas, 2005c). Chapter 3 will also focus on definitions and examples of these two types of knowledge as well as on its *application* to organizational practice.

Chapter 4 will emphasize the creation of organizational knowledge. Creation will be understood as a process which is crucial when organizations have to adapt to their changing (internal and external) environment. This happens when existing (propositional or narrative) knowledge is not sufficient, i.e. when the organization encounters problems which cannot be solved with the currently available stock of knowledge. Such „perturbations“ trigger the creation of new solutions (Patriotta, 2003, p. 183) and adapt rationalized and/or socialized knowledge to the new situation. We will interpret such knowledge creation processes as learning processes within „single“ and „double“ loops (Argyris, 1976, 1977; Argyris & Schön, 1978). Furthermore, knowledge-creation will be described as embedded in complex „actor-networks“ (Callon, 1986; Latour, 1983, 2007; Law, 1992). By analyzing specific field studies from the automotive industry (Patriotta, 2003) we will reveal knowledge creation as an open and controversial process („becoming“) which results in temporarily stable outcomes („being“) like, e.g. instructional blueprints (propositional knowledge) or guiding stories (narrative knowledge).

Chapter 5 will summarize one important outcome of the previous chapters, i.e. the existence of a general *epistemic gap* between organizational *knowl-*

edge on one side and organizational *practice* on the other. There is a tension between knowledge (e.g. a rule) and the concrete practice (e.g. the specific situation in which a rule is applied). How knowledge is applied (chapter 3) to practice, e.g. how a rule is executed, is open to various factors which cannot be predicted or determined. Also the creation of knowledge (chapter 4) is open-ended: there is no compulsory path from a situation in practice (e.g. a problem) to a specific set of knowledge (e.g. a solution, like a new rule). Organizational knowledge as distinctions (at the levels of representation, meaning, and action) is not 1:1 interlocked with concrete organizational practice. The result of knowledge creation is not simply the objectively best practical solution of a problem in practice, but is open to contingency and plurality. How the final shape of the blueprint looks like, or how a story becomes „noteworthy“ within the organization, is no mechanical selection process but a translation within complex actor-networks (Callon, 1986; Latour, 1983, 2007; Law, 1992; Patriotta, 2003). Knowledge creation is embedded in a social environment with heterogeneous actors and contextualized background assumptions. Therefore, just as the *application* of knowledge to practice is not fully determined by the knowledge's content (chapter 3), the *creation* of knowledge is not fully determined by practice (chapter 4). Facing this „underdetermination problem“, many authors tend to abandon epistemic normativity and to focus on the empirical description of knowledge-creation. Knowledge then is, for instance, anything that has action-related effects in organizations. But this understanding neglects a central feature of knowledge. A feature which has been discussed in western epistemology since Plato, and proposes to take a *normative view* on knowledge. A view which has widely been ignored by organizational studies and knowledge management literature (Schreyögg & Geiger, 1997, 2005). A view which understands knowledge as more than something that is created, applied, or transformed; which understands knowledge not only as a process or content, but as a *claim*: knowledge inherently *claims to be valid* (Adams, 2004, p. 228; Habermas, 1984; Schreyögg & Geiger, 1997, p. 83), it *claims* to be true vs. false, it *claims* to correspond to reality vs. being an illusion, it *claims* to be knowledge vs. mere belief. This hypothesis is backed by daily experience: to

believe something (often) is something different from *knowing* it. Thus, our inquiry will turn its focus to the question if there are criteria which allow to distinguish between knowledge and belief; and further, how these criteria may guide organizational knowledge creation. This search is also relevant for organizational scholars and practitioners who are interested in what makes good, or appropriate knowledge, what makes the difference between „high“ and „low-quality“ knowledge (Schreyögg & Geiger, 1997, p. 94). Hence, we will be interested not only in *epistemic attributes* of knowledge (the „descriptive view“ / „theory of organizational knowledge“, part I) but also in *epistemological criteria* of successful knowledge creation (the „normative view“ / „organizational epistemology“, part III). But before developing epistemological guidelines for organizations, part II will present an appropriate understanding of „epistemology“.

Part II - Epistemology

Chapter 6 will begin the search for such criteria by consulting traditional epistemology, a branch of *philosophy* which started with Plato (Plato / Cooper, 2001, Theaetetus 201, Meno 298). This „rationalistic epistemology“ tries to provide rational and universal criteria to determine with certainty under which circumstances a belief is knowledge, or not (Steup, 2005). In short, it states that a belief has to be *true* and *justified* (Sosa, Kim, & McGrath, 2000). Our discussion will show that a final definition of universal criteria of knowledge is problematic because knowledge always refers to an unequivocal meaning. Thus, no matter how detailed a justification turns a knowledge claim to be „true“, the claim itself always remains potentially unstable. That is because knowledge always - to a certain extent - is a generalization subsuming particularities: similar to organizational knowledge, also knowledge in general is related to a *potentially open-ended plurality of its subsumed particulars* (like e.g. in the famous knowledge claim that „all swans are white“²). Knowledge as generalized concept always transcends - and is underdetermined by - its particulars. This is why all knowledge is open to „falsification“, and why no list of universal-rational

² (Popper, 1959)

criteria of knowledge can be complete (Zagzebski, 1994). Here we encountered a logical gap between justification and truth which marks a characteristic of any knowledge claim. There always remains a gap between a knowledge claim and its intended meaning, i.e. its particularities. For scientific content this means that rules of logic, rational reasoning, or its correspondence with reality, are not alone able to determine the distinction between (scientific) knowledge and non-knowledge (Duhem, 1954; Longino, 1990; 2002, p. 124ff.). To conclude, though rationalistic epistemology is normative, it fails in providing distinctive criteria because its idea of knowledge and truth is too rigid and bound to the misconception of a universalistic, unequivocal 1:1 correspondence with an objective world.

Therefore, chapter 7 we will introduce an normative, epistemological approach which operates with an open and social constructivist concept of knowledge. First, we will discuss an analogy to map making which shows that the guidelines for creating a good map cannot be driven by universal criteria - like accuracy, coherence, or empirical correspondence - alone, but ought to be dependent on aims, purposes, and standards of the respective *community* which is going to *use* the map. The conclusion will be that criteria for successful (scientific) knowledge creation are not a priori given but depend on *aims and standards endorsed by the respective (scientific) community* (Longino, 2002, p. 116). From this social epistemological point of view, not universal criteria of knowledge are central, but rather *criteria governing the social context of knowledge creation*. We will discuss such criteria provided by the social epistemological theory of Helen Longino (Longino, 2002). Those criteria demand (a) an *enabling*, open critical discourse which is characterized by the existence of venues of criticism, the active uptake of criticism, transparency, intellectual equality, potential plurality of contributions, and so forth. Furthermore, (b) not any content by definition becomes knowledge, i.e. knowledge creation ought to be *constrained* and aligned with aims and standards of the respective community. Finally (c) those aims and standards have to be open to critical *reflection* since there have to be room for fundamental change, paradigm shifts, and „revolutions“ of a scientific (or organizational) knowledge creation community.

Part III - Organizational Epistemology

Chapter 8 will recapitulate the progress made so far and outline the general character of the normative spin of our inquiry: an *organizational epistemology* aims at defining the general parameters of the social environment of successful knowledge creation in organizations. This acknowledges the epistemic gap, plurality of knowledge, and incongruence of knowledge and practice. But it also acknowledges that „knowledge“ is a distinct notion which is different from accidental content or mere belief. Therefore, an organizational epistemology proposes epistemological criteria and guidelines which ought to frame and constrain the social interaction in which knowledge is created. Those criteria are taken from the outlined social epistemology from chapter 7.

Hence, chapter 9 will shift the discussed critical guidelines of enabling, constraining, and reflecting to the field of organizations. This will result in a set of guidelines directed towards successful knowledge creation in organizations. According to this *applied social epistemology*, organizations ought to (a) provide spaces which enable individual and collective actors to formulate new knowledge, or to adapt (i.e. to „criticize“) existing knowledge; spaces which open organizational discourse towards a plurality of views and contributions, „inclusion“, and „multi-perspectivity“; (b) spaces which allow critical discursive interaction, connecting it with organizational goals and structures; spaces which make organizational goals and values accessible via „transparent standards“, but which (c) also - on a reflective meta-level - allows critical reconstruction of those very goals and values.

Chapter 10 will use those epistemological criteria as evaluative templates in order to analyze a use-case taken from the convenience retailer „Seven-Eleven Japan“ (Nonaka, Toyama, & Hirata, 2008, p. 138ff.) where we will take a closer look at the „items-management process“ (the determination which goods are ordered at which time to which store). Using terminology and concepts of the theory of „organizational knowledge“ from part I we will first interpret that „items-management process“ as a knowledge creation process. Second, we will supplement this descriptive interpretation by the „organizational epistemological“ approach from part III, and evaluate if and how Seven-Eleven

Japan designs its items-management environment towards a successful knowledge creation environment. To do so we will use our epistemological guidelines *enabling, constraining, and reflecting*. This will result in both an evaluation of the status-quo as well as in suggestions for improvements. To conclude, our inquiry will not only outline a theoretical toolkit but also give an example on how to apply it to a real world organization.

Chapter 11 summarizes our inquiry and recapitulates its main concepts, closing with suggestions for further research.

Part I - ORGANIZATIONAL KNOWLEDGE

Chapter 1: Organization as conceptual distinction

The management guru Peter Drucker famously remarked that the perfect prototype of an organization is the classical symphony orchestra (Drucker, 1993, p. 85). The latter is a complex social field which consists of different actors with different backgrounds and specialized skills (figure 1.1). But the tuba alone does not produce the music. It is the organized activity of all musicians that allows the symphony to be performed. And that is what makes the magic of organizations: they connect heterogeneous elements and actors to an, at least temporary, order.

But how do they do that? What are the main mechanisms, methods and principles that enable organizing? A first answer may be that organizations are held together and guided by common goals. Hence, the individual members of an orchestra are bound together because they share common goals, a joint purpose to which every single musician has to be committed to³. In our inquiry we will explore many different ordering principles which constitute organized settings and which we will call „concepts“. Such concepts can be organizational goals.

But examining an orchestra also reveals a variety of other concepts by which the separated actions of the musicians are collectively structured. For instance, every musician plays individually but they all use the same musical score which is guiding their activities. Furthermore, the orchestra is not simply an accidental accumulation of people but structured and differentiated by various functions and roles: one group plays the flute, another one the violin, and so on. Moreover, these various distinctions are again ordered and integrated; in this case through hierarchy: there is a conductor, a lead violin, first violins, second violins, and so forth.

But the success of an orchestra does not only depend on such *rational* structures like formal roles, rules, or hierarchies; the orchestra is a social field, not a machine. Hence, social structures are significant factors as well: for ex-

³ Such a goal which aligns individual activities can be e.g. to perform a given symphony as good as possible. Of course, problems arise already here: What is the criterion of „good“? Are all individuals really motivated by one official goal? We will discuss the complexity of goals in chapter 1.1.

ample, how the musicians identify themselves with the orchestra; in which atmosphere rehearsals are carried out; who speaks with whom when problems occur; or how the director is able to motivate the musicians.

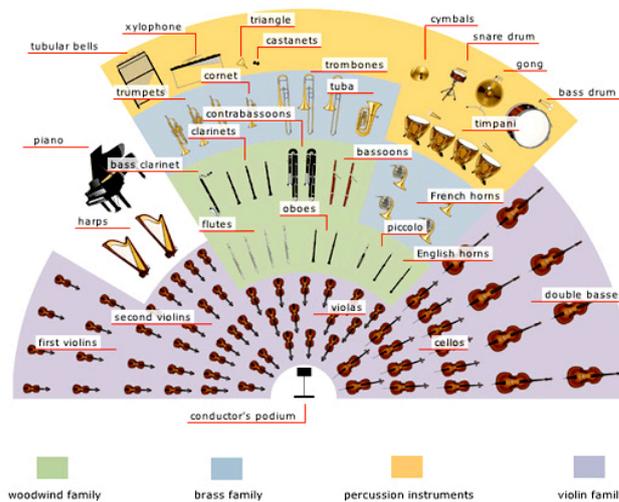


Figure 1.1: Prototype of the organization: the symphony orchestra ("Merriam-Webster Visual Dictionary: Symphony Orchestra," 2010)

Similar to the symphony orchestra, any organized context is shaped by goals (chapter 1.1) and specific processes of structuring (chapter 1.2). This seems to unite such different organizational fields like private firms, public institutions, ministries, parties, churches, universities, and so forth. Therefore, we will trace the literature of organizational studies⁴ and try to systematically outline different proposed characteristics of organizations as „organizational concepts“. Then we will switch to a more reflective level. In chapter 1.3 we will interpret organizational concepts as modes of world-construction, i.e. as devices with which humans make sense of their complex environment. This philosophical reflection upon the origin of organizing will highlight today's important role of organizations. They are not only observable things in the world; they are vehicles for humans to construct their world as well as their actions. Organizing is one way of how we deal with our existential situation, i.e. how we make sense of the

⁴ „Organizational Studies“ will mark the scientific approach to organizations. This interdisciplinary discipline is sometimes also referred to as „organizational theory“ (Hatch & Cunliffe, 2006) or „studies of organizational behavior“ (Buchanan & Huczynski, 1997; Robbins & Judge, 2010).

radical openness and the contingent character of the world we are „thrown“ into.

1.1 Organizational goals

What is an organization? Some authors would describe an organization as a social field in which activities of actors are geared towards specific purposes and aims, giving its collective action a direction⁵. In both, academic and non-academic discussions, this leads to definitions which explain organizations as a

„group of people intentionally organized to accomplish an overall, common goal or set of goals“ (McNamara, 2010)

Of course, such a definition contains self-referential problems, for instance, an *organization* being explained as something that is *organized*. However, such a definition legitimately highlights the importance of goals. Organizations are not simply a group of persons who are accidentally bound together - like, for instance, standing in a queue in front of a cash dispenser (Schreyögg, 2008, p. 8) - but rather constitute a social collective committed to a common goal that is pursued in an institutionalized way. In brief: „organizations are goal-oriented institutions“⁶ (Drucker, 1993, p. 83). In chapter 1.2 we will discuss how organizational action is institutionalized and structured (and hereby resolve the self-referential term „organized“). But before that we will focus on organizational action being directed towards a goal.

Goals will play a significant role in our inquiry as they will turn out to be importantly related to the discussion of organizational knowledge. This is because knowledge in organizations ultimately is „practical“ knowledge, thus related to an action context which is - among others - also shaped by purposes and goals of human conduct. Our next passages will take a closer look at the complexity of organizational goals.

⁵ see e.g. (Schreyögg, 2008, p. 4ff.)

⁶ author's translation; original citation: „Organisationen sind zweckorientierte Institutionen“

1.1.1 External complexity: the social environment of goals

The idea of an ultimate goal is to formally constitute the purpose of the organization as guiding principle for decisions and action (Drucker, 1993, p. 83). For example, „maximizing profit and sales“ for a bank, or „helping women who are suffering from domestic violence“ for a social NGO would be official and legitimate goals for the respective organizations. But are organizations really determined by single goals? Are members of the organization (henceforth *organizational actors*) carrying out their work because they all are committed to the same official organizational goal? Chester Barnard, an early author within the field of organizational studies, was puzzled by a similar question (Barnard, 2002). He tried to explain why and how actors cut back on their direct personal needs and subordinate their actions to an external authority like an organization. His explanation was that a „zone of indifference“ can be established in which members would carry out their tasks and subordinate their activities under the directives of the organization (Barnard, 2002). And only in very rare cases this subordination can be solely achieved by commitment to organizational goals alone. For actors to enter a „zone of indifference“ they need to be compensated by „inducements“ like money, pride, status, and so forth. According to Barnard, it is theoretically imaginable (and in fact often observable) that such a compensation with material or non-material inducements could substitute the commitment to common goals at all. In other words: the „real“ motivation for actors to carry out their work needs not be linked to official goals. The bank clerk, for example, may not be motivated by „profit and sales“ of his organization but by helping families in need with opportune micro credits; and the lawyer working for the social NGO may not be motivated by „helping women suffering from domestic violence“ but by bringing home the next paycheck and/or in adding a good looking entry into her CV.

The point made here is that official goals alone are not sufficient when exposed to the complex social world of human beings. In contrary, organizational goals can be excluded from the motivational structure at all. In the most extreme case this may reach a level where knowledge of, not to mention identification with, the organizational goal is simply nonexistent and fully discon-

nected from the life-world of the actor. This possibility not only raises moral issues⁷ but challenges the functioning of any organization. In contrast to pre-modern societies, today's pluralistic and heterogeneous societies offer their members multiple life-worlds and allow a variety of individual identity creation (Bauman, 2001). The distance between individual action and the collective organizational goal certainly mirrors the socio-historical development: modern societies are marked by a „disembeddedness“ of their institutions (like markets or organizations) from the „life-world“ of human subjects (Giddens, 1990; K. Polanyi, 1957)⁸. We cannot deepen that discussion here, but it already gives a glimpse into the complex external socio-dynamic environment, organization's face. This forces organizations to (re-)establish the identification of organizational actors with organizational goals. Typical measures are activities like „internal branding“, the establishment of specific „organizational cultures“ (Smircich, 1983), or „sensemaking“ (Weick, 1995b).

To conclude, organizational behavior cannot be explained by one-dimensional goals. This does not mean that the notion of *organizational goals* is unnecessary in order to understand organizations (and organizational knowledge). It means that the idea of *goals* has to be extended, multiplied, and adapted, which leads to the second complexification.

1.1.2 Internal complexity: diversity of goals

The goal of an organization is never *a* goal but it is sub-structured as a multi-faceted network of goals and objectives. According to Herbert A. Simon - also an early organizational studies author - a closer look at organizational decision-making reveals „a whole set of constraints“ (H. A. Simon, 1964, p. 20) which are involved in social action of organizational actors⁹. For example, the goal to

⁷ The distance between individual human activity and the final products of that activity, i.e. also of the final organizational goals, may lead to total loss of responsibility and accountability (Anders, 1956). This was observed in fascist production organizations as well as in production processes of modern war technology, especially of atomic weapons (Anders, 1983).

⁸ see also Jürgen Habermas' distinction between „life-world“ and „system“ (Habermas, 1984, p. Vol. 2).

⁹ In classical management literature, Peter Drucker also highlighted the fact that an organization cannot (and should not) be reduced to one single goal or need (Drucker, 1954, p. 62f.; 1992a, p. 299)

make profit, certainly is a primary and legitimate organizational goal of most capitalistic firms. But that does not mean that every actor directly has to follow that goal or to identify his/her actions with it: „the goal ascription does not imply that any employee is motivated by the firm’s profit goal, although some may be“ (H. A. Simon, 1964, p. 22). The (admittedly essential) goal to make profit has not to be part of (or to determine) all other possible goals of an organization. We need not to drill down a main goal to all sub-levels. This is because „decision-making mechanism is a loosely coupled system in which the profit constraint is only one among a number of constraints and enters into most sub-systems only in indirect ways“ (H. A. Simon, 1964, p. 21). Consider a firm’s R&D (research and development) department, whose decisions and activities would directly be determined by profit outcomes. Taken literally, this would slow down or even obliterate the creation of new knowledge. Without some sort of „enabling space“ (Peschl, 2003), which (at least temporarily) relieves the R&D department from the main goal of profit making, the emergence of radical new innovations would be highly unlikely.

This generates something we could call the *profit-paradox*. Such a paradox arises when we try to understand action as determined by a straightforward, single organizational goal. The paradox then could be defined as follows: if all organizational action of an innovation dependent firm is aligned with the singular goal „profit“, specific parts of the organization which operate less efficient under that very goal (e.g. the R&D department) will yield poor results. This, in turn, leads to unsuccessful achievement of profit because the firm’s success depends on innovation. This also leads to an unsuccessful achievement of the objective of profit defined earlier, i.e. to less profit. In short: following a singular organizational goal consequently may undermine the achievement of that very goal. Theoretically, similar paradoxes can be located with any other goal. For example, „radical innovation“ on all levels would very likely destabilize the organization and consequently undermine innovation at all as there would be no resources left to exploit innovation¹⁰. For practitioners to avoid such paradoxes

¹⁰ See the related discussion about the tension (and the need for reconciliation) between „exploration“ and „exploitation“ which goes back to Joseph Schumpeter’s theory of economic development (Schumpeter, 1934) and was adapted to the context of organizational learning by James March (March, 1991).

and for organizational researchers to understand organizations properly, goals have to be modeled as multi-dimensional concepts.

1.1.3 Summary

The organizational theorist Karl Weick once remarked that the only appropriate advice we could give to someone struggling with adaption to change is: “Complicate yourself!” (Weick, 1979, p. 261). Our last two sub-chapters called for a similar differentiated understanding of organizational goals which forces organizations to complexify themselves along with their internal and external contingencies. How to challenge this situation seems to be a main issue of strategic management literature and practice. This is already prevalent in Chester Barnard’s classic work on how to trade-off between the „contribution” of a person carrying out actions on behalf of the organization and the „inducements” by which the person is compensated for that contribution (Barnard, 2002). Consequently, an „efficient“ organization is able to satisfy not only formal goals but to incorporate the multiple „motives” of its actors into a diverse set of organizational goals.

A newer and more operationalized version of managing the complexity of goals can be found in the „Balanced Scorecard“ model (Kaplan & Norton, 1992). This widely applied approach links strategy and goal-definition to four main contexts whereof „financials” is only one part. „Internal processes”, „customers” and „learning” are other contexts relevant to the definition of organizational goals (figure 1.2). According to this approach, successful organizations have to „balance” their various goals with respect to these four contexts.

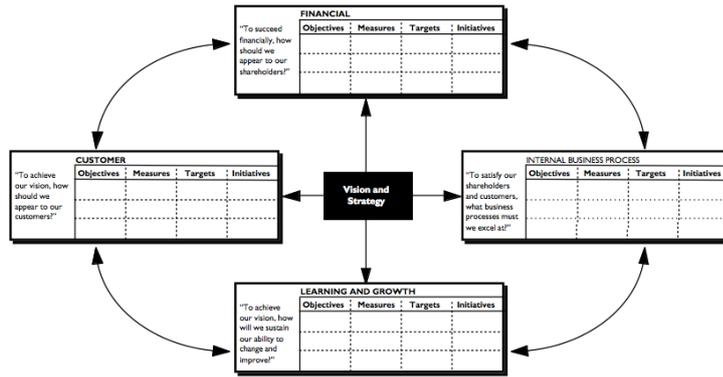


Figure 1.2: Managing the heterogeneity of organizational goals: the „Balanced Scorecard“ (Kaplan & Norton, 1992, 1996)

Note that neither the context of external social complexity (1.1.1) nor the internal diversity of organizational goals (1.1.2) lead to the conclusion that an organization cannot be described as being constituted of goals (though it certainly is not a sufficient description). The previous thoughts may have complexified the concept of goals but without diminishing its relevance. We will leave the discussion on organizational goals for now but return to this important concept later on in chapter 3. We will then see that in order to understand the meaning of organizational knowledge (e.g. the knowledge of routines in order to carry out action) actors need to relate their knowledge to goals in order to be able to translate knowledge to action. The *meaning* as well as the expected *application* of organizational knowledge is not manifested in the knowledge content itself (e.g. in the written routine) but in its relation to the organizational context. And the latter is - besides others - shaped by goals. To have goals is a constituting and crucial element, a *sine qua non* of organizations.

1.2 Organizational structure

1.2.1 Rationalized concepts - Organization as „institution“

The fact that organizations are aligned towards certain ends and are constituted by goals is of course only one part of the story. The second main characteristic of organizations is that they are *structured*, i.e. they create sustaining and institutionalized forms of behavior. Following the path of enlightenment, early or-

organizational studies proposed that what makes organizations „organized“ is the fact that they rationally structure social fields. According to Max Weber, this is accomplished through the rationalization of individual and collective action (Weber, 1947). To endure rational decision-making and organizational action („bureaucracy“) individual and collective behavior is formalized and standardized. This makes the heterogeneous social setting of organized contexts predictable, goals can be set up and their attainment controlled. The rise of scientific rationality and industrialization, the idea that reason is able to control both human and non-human nature, and the advancements in the division of labor; they all lead to an „ideal type“ of the organization as a perfect working „machine“ with humans as its „cogwheels“ (Weber, 1946, p. 128).

According to Frederick W. Taylor („Taylorism“), design and control of organizations is accomplished by implementing „scientific management“ (F. W. Taylor, 1998 [1911]). Management is „scientific“ if it analyzes work processes and drill them down to their most basic elements. These elements are then restructured, and put into interrelated activities and hierarchies. To assemble a car then has not to rely on few high skilled workers anymore who need to know everything about car making and who perform all the production steps. Instead, car making relies on the interplay between many (often unskilled) workers who serially perform the analyzed basic production steps. To do so, organizations have to be built as rationally planned institutions offering formal rules and authority under which actors are collectively subordinated.

Those rationalistic approaches to organizational studies focus on *rules*, *roles*, *routines* and *command lines* as constitutional concepts of the making and management of organizations. To organize is to „enact rules“ (Schreyögg, 2008, p. 11)¹¹ and to introduce order. To do so, different structuring principles were developed. According to rationalistic oriented approaches, organizations have to be structured within two different dimensions: (a) horizontally and (b) vertically. Organizations have (a) to be structured horizontally along functions or departments, i.e. structured along the concept of *differentiation*. The origin of that idea is the division of labor: activities have to be divided into different

¹¹ author's translation; original citation: „Regelungen schaffen“

fields and functions in order to be carried out efficiently and to allow, for instance, large scale production. According to the „open systems model“ (Hatch & Cunliffe, 2006, p. 61f.; Katz & Kahn, 1966), in the beginning organizations usually are small, and only barely differentiated in distinct sub-groups. What structures action instead, is ad-hoc decisions based on shared common goals. As the organization grows it tends to differentiate itself in sections like purchasing, production, sales, maintenance departments, and so forth. That „departmentalization“ (Fayol, 1949) stretches the organization in its horizontal structure (see figure 1.3).

But such a *differentiation* calls for *integration*. From a rationalistic standpoint, organizations lose control and structural integrity, if there is no integration of different parts of the organization. There should not be any „loose“ parts that are not connected to (and controlled by) a higher entity. This is where (b) the concept of *hierarchy* comes in. Hierarchy is a concept for structuring organizations vertically (see figure 1.3). Similar to the old scientific rule that complex concepts need to be subsumed (and deduced) by higher-level (more general) concepts also organizations have to be structured as pyramids or trees¹². The French management pioneer Henri Fayol introduced famous concepts like „unity-of-command“ (every actor needs to have exactly one supervisor), the „scalar principle“ (communication and commands are to be carried out only from one level of the hierarchy to the next one, and not any further) or the question about „span-of-control“ (which discusses how many subordinates should ideally be overseen by one manager)¹³.

¹² Traditional western thinking is based on the form of the „tree“ (Deleuze & Guattari, 1987) - a paradigm which also heavily influences organizational studies.

¹³ (Fayol, 1949; Hatch & Cunliffe, 2006, p. 24f.; Schreyögg, 2008, p. 33ff.)

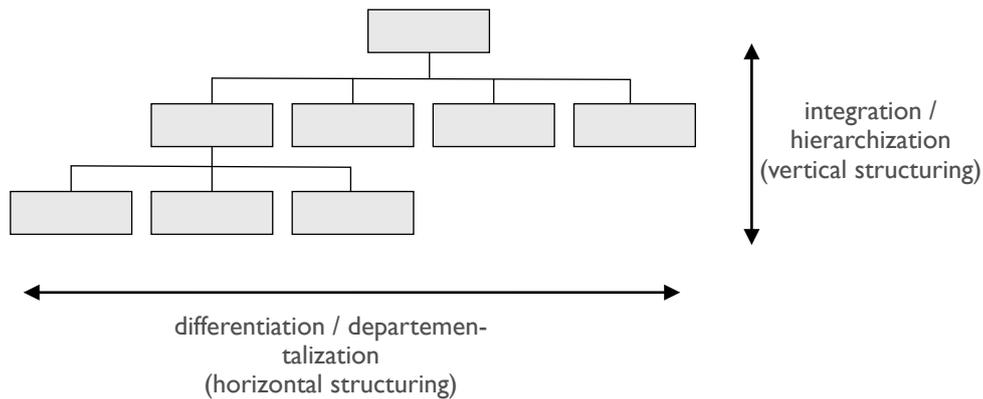


Figure 1.3: Differentiation and integration as rationalistic organizational concepts

Rationalistic organizational concepts like formal rules and roles, authority, differentiation, and hierarchization converge with the rationalistic view of *management*. The latter is seen as an intentional activity which is centered around planning, commanding, coordinating, and controlling. Hence, the main task for managers is to implement and configure organizational concepts (e.g. to design and adjust the structure of rules, hierarchies, departments, etc.) towards the achievement of organizational goals. In its most basic model, management is a three-step feedback cycle between planning, implementing, and measuring (see figure 1.4).

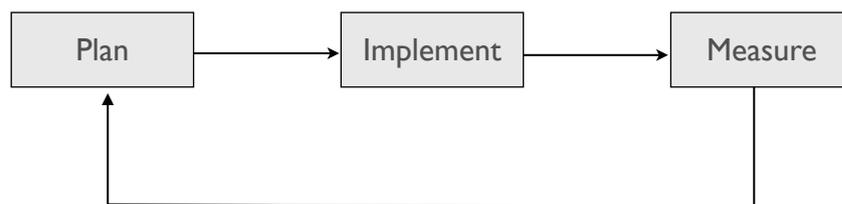


Figure 1.4: The basic rationalistic management feedback cycle

A classical approach oriented on that model can be found, for example, in the „POSDCoRB“ model (Gulick & Urwick, 1969) where Luther Gulick and Lyndal Urwick further developed the work of Henri Fayol and introduced a typical rationalistic view of the management of organizations (see figure 1.5). According to organizational goals, the manager „plans“, „organizes“, „staffs“, „coordinates“, and so forth. Through reporting mechanisms success can be measured and used as input for the following planning.



Figure 1.5: Gulick & Urwicks „POSDCoRB“ management model

To conclude, rationalistic approaches propose that organizations are created not only by setting up goals but also and especially through implementing concepts like *hierarchy, differentiation, authority, command structures, formal rules, and routines*. The task of management is then to shape these structuring concepts along with organizational goals.

1.2.2 Socialized concepts - Organization as „practice“

Later developments in organizational studies recognized the shortages of the rationalistic paradigm presented in the last chapter. Rationalistic concepts have been criticized as being unable to explain the multi-faceted social complexity which we observe in real-world organizations (Quinn, 1988). This generated the motivation to look for further and alternative organizational concepts beyond mere rationalistic patterns.

Critics against rationalistic concepts question character as well as importance of rationality. It was, for instance, stated that organizations face indispensable and radical „uncertainty“ which cannot be fully solved by rational planning and design (Knight, 2006). Coping with high internal and external complexity, organizations observe themselves as being equipped with an only limited, „bounded“ rationality (H. A. Simon, 1991, 1997). Finally, postmodern oriented approaches question rationality in general and criticize ideas like planning and commanding as „rationalistic illusion“ (Schreyögg, 2008, p. 74).

We do not want to fully abandon traditional concepts presented in the last chapter but we will take a look at literature offering alternatives (or better: supplements) to rationalistic approaches.

Some critics do emphasize the fact that crucial processes in organizations are not placed within formal but around *informal* structures (Schreyögg, 2008, p. 47). It has been observed that planned and set up formal structures often were not the only constitutive elements of organizations. In almost all organized fields informal communication and structures evolve and play significant roles in daily activities. In most cases, informal structures emerge because of the inefficiency, or even the lack of formal structures. One example is communication which escapes formal hierarchies: most hierarchies are based on Fayol's „scalar principle“ which states that communication is only allowed from one hierarchy level to the next (upper or lower) one (see chapter 1.2.1). In many cases this leads to problems because direct communication between two positions, with more than one level distance, may be more efficient:

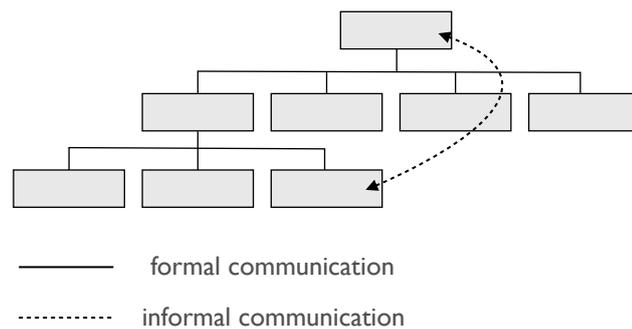


Figure 1.6: Informal communication

The consequence is that in concrete social settings these inefficient formal rules are overruled. Individuals create their own paths of communication in their day-to-day practice. New social patterns emerge and substitute or extend the officially set up structures. Informal organizing is observable virtually anywhere and can be detected through, for example, using network analysis (figure 1.7). They may take over essential functions from dysfunctional formal rules¹⁴ as well as they may be transformed to formal rules after they have been officially accepted as useful.

¹⁴ Informal rules may be apprehended as a „corrective“ against „dysfunctional“ formal rules (Schreyögg, 2008, p. 13). Formal organizations have lost their „monopoly of order [Ordnungsmonopol]“ (Luhmann, 1995, p. 30).

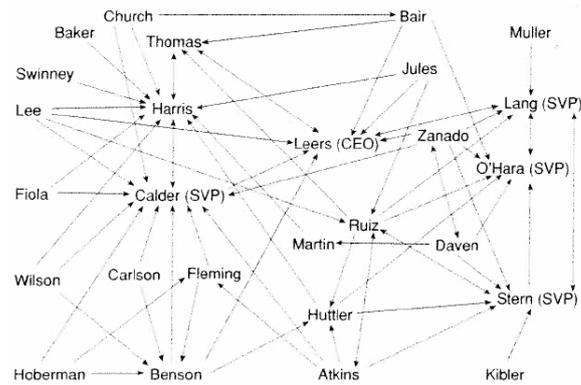


Figure 1.7: Network analysis of organizational communication structures (Probst, et al., 2002, p. 78)

Similar to informal rules also formally predefined patterns of behavior and problem solving can be supplemented by more social concepts. Rationalistic approaches would state that actors pursue their actions according to a given set of prescriptive routines which are provided by the organization (e.g. in form of written directives or handbooks). But organizational researchers have revealed that action in many cases is not only based on routines but also on „narratives“ (Tsoukas, 2005a). The social scientist Julian E. Orr carried out famous studies observing copy machine technicians in their daily practice (Orr, 1996). As his results show, these actors did not solve problems in solely using given instructions from their handbooks. Although that source of information was very compulsive, technicians oriented their problem solving action in their day-to-day activities more on stories and best practices that have been circulating within their community (Orr calls such stories „war stories“). Hence, to repair a copier, technicians seem to be guided by stories of former similar individual events which they apply and adapt to the actual situation. Stories are adapted, applied, and retold, thereby condensing to organizational narratives. Narratives are efficient problem solving devices because they do not structure action as a mechanistic execution of abstract „if-then“ routines but as a recontextualization of

adaptive stories (operating rather via an „as-if“ logic¹⁵). This enables actors to react more dynamically to new situations. A narrative is

„linked to practices, i.e. (to) context-specific, temporally arranged, accounts of events and actions. It helps to conserve and mediate individual experiences and can be used as background knowledge when experiencing novel situations.“ (Rögnvaldur, 2006, p. 348).

We can conclude that the (organizationally defined) activity of repairing faulty copiers was not structured by formal routines alone but by concrete narratives emerging out of social interaction and (often informal) communication. Today, many organizations react to that phenomenon by providing both technical and social environments which enable the creation and application of organizational narratives. Such measures motivate, for instance, the setup of cross-organizational „communities-of-practice“ (Brown & Duguid, 1991) or best-practices-pools¹⁶.

Another paradigm shift was initiated by results of the so called „Hawthorne-Experiments“. The Hawthorne studies were conducted in a large company in the United States of America in the 1930s. Its initial aim was to show correlations between change in the physical structure of the organization (external work conditions like e.g. intensity of light) and productivity. But instead of showing lower productivity while worsen work conditions, productivity *increased* from day to day. The scientists finally discovered that the fact of being part of an important research project raised employee pride and satisfaction. This lead to higher team cohesion and motivation resulting in higher work productivity (Gillespie, 1991; Roethlisberger, Dickson, Wright, & Pforzheimer, 1939). The latter showed that efficient production does not only correlate with rationalized structuring but also very significantly with socio-emotional factors like social contacts among workers, motivation, pride, employee satisfaction,

¹⁵ for the important distinction between organizational knowledge following an if-then logic („propositional knowledge“) and organizational knowledge following an „as-if“ logic („narrative knowledge“) see (Tsoukas & Hatch, 2005) who refer to the theoretical distinction between two „modes of thought“ defined by Jerome S. Bruner, i.e. the „logico-scientific mode“ and the „narrative mode“ (Bruner, 1986, 1996). The comparison is also made by Gerardo Patriotta, but in a different context (Patriotta, 2003, p. 189).

¹⁶ Within large consulting companies like McKinsey & Company or Accenture we find examples for best-practices-pools (Probst, et al., 2002, p. 74). They systematically store successful project experiences and make them worldwide accessible throughout the organization.

identification with the organization and the products, or relations between supervisors and subordinates. The „human relations movement“ (Mayo, 1933) picked up these results and concluded that such „human“ factors (vs. „rational“ factors) generate a social environment which fundamentally structures organizational behavior and success¹⁷. Other „non-rational“ factors which seem to significantly influence structure and behavior in organizations, have been developed in the discussions about power (Alvesson & Willmott, 1992, 2003) or emotions (Ashkanasy, Härtel, & Zerbe, 2000; Forgas & George, 2001) in organizations.

A further related approach can be found in the wide discussions on *organizational culture* (Dietrich, 2001; Schein, 1992; Smircich, 1983). Here again, it is not the formal structures of rules and hierarchy which order the world of the organization but a socio-symbolic culture which enables actors to create meaning and to carry out action. Instead of rules and routines it is concepts like values, assumptions, and symbolic representations („artifacts“) which shape the organization (see figure 1.8).

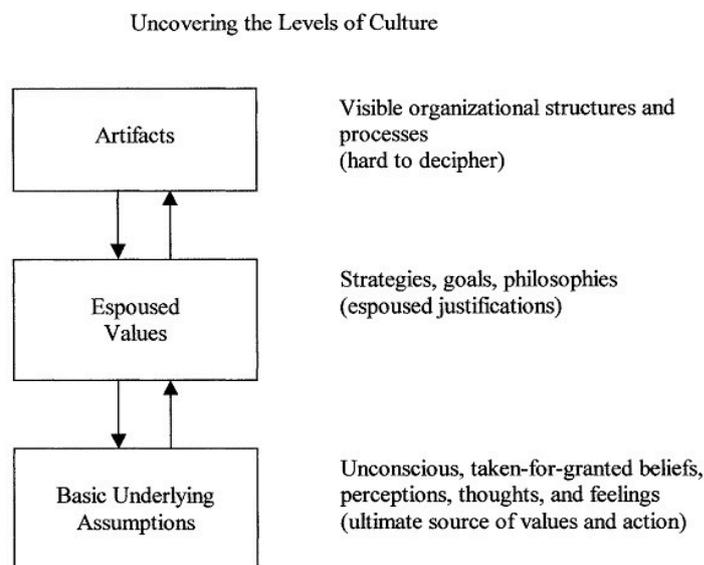


Figure 1.8: The three layers of organizational culture, according to Edgar H. Schein (Schein, 1992, figure 9); picture taken from (Onwuchekwa, 2010).

¹⁷ The „human factor“ was already subject of our discussion in the chapter on organizational goals. In fact, Chester Barnard’s approach can be counted to that approach of organizational theory (Schreyögg, 2008, p. 48).

Ideas about organizational culture are closely related to more constructivist underpinnings which define organizational members not as mere executing agents determined by rules and hierarchy but as active actors who base their actions on own interpretations of their social world. Actors engage in „sensemaking“ (Weick, 1995b) which allows them to label, understand, and interpret the flux and complexity of the given world and to carry out action towards the fulfillment of organizational goals (Weick, 1995a, 1995b; Weick, Sutcliffe, & Obstfeld, 2005).

Compared to the last chapter, the outlined concepts in this chapter focus more on social characteristics than on rational control (or „design“). Such „socialized concepts“ have added valuable contributions to the understanding of the dynamics in organizational contexts. They also shifted the empirical focus of organizational studies to the micro-foundations of organizational behavior. For organizational studies this implies that besides discussing organization charts and board directives, organizational researchers now also focus on daily communication and basic interactions, i.e. on the *practice* of organizations. To grasp the ongoing constitution processes of organizations „on the spot“, scientists apply methods like qualitative interviews and participatory observations. This aims at to scientifically observe the place where organizing is actually happening. Because organizations are social fields, many authors emphasize that research should be directed towards the mundane patterns of everyday organizational practices which have been neglected by traditional approaches in favor of abstract layers of rational structures¹⁸.

1.2.3 Summary

This chapter traced organizational studies in their quest for detecting the fundamental characteristics of organizations. We have seen that every approach develops concepts which are claimed to be able to make sense of (and explain) observed phenomena in organizations. Hence, the basic question of organizational studies seems to be: what are the core concepts to understand and explain

¹⁸ see the discussion of the „practice turn“ in (Schatzki, Knorr-Cetina, & Savigny, 2000)

organizations? Some rather rationalistic approaches would answer that we have to look at its hierarchical structure, formal rules, or management cycles (here, organizations are understood as constituted by „rationalized concepts“). Some rather socialized approaches would point at its informal, emergent structures, daily practices, culture, or power-relations (here, organizations are understood as constituted by „socialized concepts“).

In the next chapter we want to approach these organizational concepts from the view of philosophical reflection. We want to show that (and how) these „concepts“ are world-structuring principles of organizations. „Rules“ or „narratives“ then are not only observational categories of organizational studies but performative processes which shape the way of how organized actors interpret, order, and make sense of their world and their action. „Concepts“ are seen as fundamental sources and as processes of world-construction by which the organization and its social field come into existence. This aspect of organizational concepts will be philosophically grounded in the next chapter. Organizing will then be seen as one way of how humans deal with their existential condition. This condition (the „conditio humana“) will be outlined as a situation in which humans face reality not as a preexisting and given world but as radical openness, as chaotic flux of heterogeneous elements. This forces us to permanently design ourselves (as well as our environment) to actively make sense to the world and to creatively shape our action. The organization will be presented as one mode in which all this is happening.

1.3 A philosophical view: organizing as open-ended mode of world-construction

This chapter tries to reflect upon the fundamental source of organizing. We will introduce a view which places organizations not as mere objects *in* the world but as active constructors *of* the world. As such, organizations - via their presented concepts presented in chapter 1.2 - are ways of ordering, constructing and making sense of the open-ended flux of reality. But if we want to understand both why and how this is the case we need to take a step back. We will need to take a preliminary look at basic questions of the human condition, sub-

jectivity, and the methods of world-construction. Only after that we will be able to explain the role of organizations and its relevance to human existence today. Only after that we will be able to formulate the fundamental origin and function of „organizing“.

1.3.1 „Copernican Revolution“ and methods of world-construction

In the history of ideas it was at the end of the 17th century when Immanuel Kant proposed a revolutionary form of epistemology which decisively changed our thinking about reality and its relation to human subjectivity (Kant, 1781/2003). Kant stated that philosophers for sure have asked interesting questions about the nature of things, the world, god, the (eternal) soul, or freedom. And also science, with its diverse disciplines, has gathered a huge amount of knowledge about the world. But what are the preconditions for the philosopher's and scientist's access to the world? A grounding reflection should take a look not only at the objects which we talk about but also at the talking itself. Instead of focusing on the nature of things Kant suggests to focus on the „condition of possibility“ of things. While philosophers up to that time were mainly concerned with the objects themselves Kant's idea was to take a look at the subjective activities and concepts which make objectivity possible. How come things to become things *for us*?

Kant's position says that we, as subjects, intentionally direct our attention to the world; but that world is not simply „given“. Human perception does not face a world which „contains“ readymade, external objects. In contrary, Kant states that human perception initially faces a chaotic world of „manifoldness“ which does not contain distinct elements at all. Passively taken, all we „receive“ from the world is an unordered flux of chaos which has to be arranged, structured, organized, and made sense of. But that sense does not come from the world (from the object); it comes from the subject (making the object possible in the first place). This is the crucial turn in Kant's argument. Namely that only in actively applying concepts like, for example, space, time, or causality human minds are able to make sense of the world. Through such concepts the surrounding flux of complexity is „synthesized“ resulting in the construction of

objectivity and making possible the supposedly „given“ world. Objectivity is then nothing else than an effect of active subjective construction processes. Whenever we describe an object or situation we have already applied concepts („categories“) with which we had constructed that very object or situation. Take, for example, the observation of a glass bottle which falls from a table bursting into thousands of pieces. In our daily understanding we mostly attribute all these details about the situation to external objects and relations in the world: to hit on the ground is the cause for the bottle to burst. But critically analyzed, this view is not correct. Observing the situation of a bursting bottle, we have already „a priori“ structured the objects within the frames of space and time: both bottle and table do have certain dimensions and relations to each other in *space*; furthermore, to imagine something to „burst“, *time* has to be involved as shaping precondition to allow transitions (from the glass bottle being whole to being burst into thousands of pieces). Moreover, *causality* has to be in place in order to explain that there actually is a connection between the falling, the hitting on the ground, and the bursting. David Hume, contemporary to Kant, used similar examples (Hume, 1748/1999, p. 4.10) to conclude that causality cannot be found in the content of perception itself. Strictly speaking, all we can „see“ while a bottle hits the ground, is a sequence of impressions but no internal causal necessity between one impression and the next one. For Hume therefore, causality was more or less an illusion. Kant agreed that causality is not part of the world as such but refuted Hume’s sacrifice of causality at all (Pierris, 2008). There „are“ causal relations but only because humans structure events as causal events. Humans do actively apply the concept of causality to the situation. The question if there „is“ causality as such in the external world, lies beyond the capacity of human understanding. There is in general no way of having direct access to the world as such. The question what a „thing-in-itself [Ding-An-Sich]“¹⁹ is, generally remains unanswerable.

That the source of meaning of objects is not a manifestation of the world but of the subject marks a turning point in history of (western) thinking. This „copernican revolution“, how Kant himself labeled his contribution (Kant,

¹⁹ This is also why core philosophical questions about world, god, and freedom cannot be answered within Kant’s framework, at least not in the traditional way.

1781/2003, preface to the 2nd edition), dramatically shaped our understanding of humans („subjectivity“) and their world („objectivity“). By switching the focus from the structure of the world to the structure of the construction of the world, it became clear that the objective world, subjective perception, and action depend on permanent construction processes. These processes are guided by concepts which allow us to make distinctions in order to make sense of the world. For example, the concept of „time“ allows to distinguish between before and after, the concept of „space“ between here and there, or the concept of „reflection“ between myself and the world. To structure the world by concepts is to make distinctions (e.g. within a spatio-temporal order). And distinction-making is to synthesize the given „manifoldness“, which is to make the world.

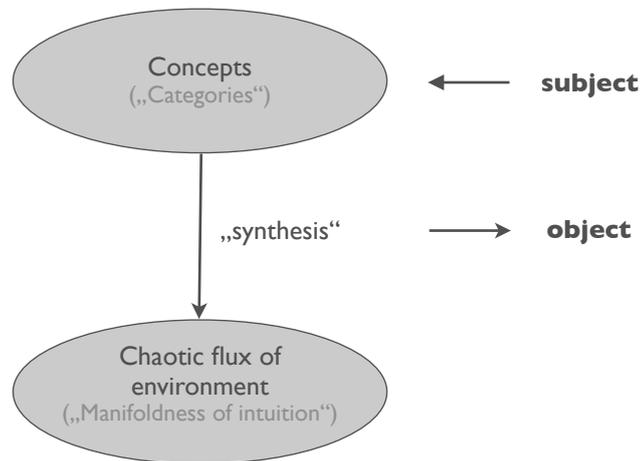


Figure 1.9: Simplified and adapted illustration of Kants epistemology

Kant understood concepts („categories“) as ordering principles. They put the radical openness of the observed environment in order by subsuming all the heterogeneous particulars of perception under categories. For example, the empirical concept *tree* tries to define the main characteristics of all the different trees we may or may not observe. Hereby, the perceived world is full of different trees, including an open amount of kinds I have not seen yet and probably never will see. Note that this does not imply that concepts are fixed whereby the heterogenous environment is open-ended. Open-endedness is also an attribute of concepts themselves. Concepts are provisional; they are open to change and permanent modification. Hence, if I was to encounter new plants which would

be very similar to trees I would probably modify my concept of trees instead of foreclosing those new plants from being trees. Kant reminds us that radical openness is not only limited to our world but consequently also to the concepts we use to order our world. Our world constructions are inherently unstable and contingent. This gets more obvious if we focus on concepts within the social context. Take, for instance, the concept of „family“ and its redefinitions in the last 200 years. What defines a family is open to permanent change and redefinitions; it is a flexible concept.

For Kant himself, open-endedness of concepts also plays an important role in the social context, namely within his moral philosophy. There he demonstrates the impossibility of a rock-solid foundation of morality, if this foundation is to be based on some concepts of human nature (Kant, 1785/2005). The question how to act morally cannot be a priori grounded, for instance, in a concept of „happiness“ (as it was done by most classical philosophers). The reason is that it is impossible to synthesize and generalize „happiness“ simply because concepts cannot fully subsume heterogeneous particulars under a final structure. There cannot be a finalized definition of the concept of „happiness“ because concepts are bound to permanent redefinition and change: „the concept of happiness is so indefinite that, although each person wishes to attain it, he can never give a definite and self-consistent account of what it is“ (Kant, 1785/2005, p. 21). Of course, one could try to define, for instance, „wealth“, „knowledge“, or „a long life“ as desirable aims towards reaching happiness. But who says that these aims are agreed upon by all human beings? Today we would argue that the differences between societies, cultures, or social classes make it impossible to define a universal concept of happiness. We would say that the pluralistic character of the social makes a final closure of the concept of happiness not imaginable. Kant argues even more radically; for him it is *logically* impossible to permanently fix the meaning of „happiness“:

„Now it is impossible (...) to form a definite and detailed concept of what he (the person, KS) really wants here on this earth. Consider some of the things people say they aim for. Wealth: but in willing to be wealthy a person may bring down on himself much anxiety, envy, and intrigues. Great knowledge and insight: but that may merely sharpen his eye for the dreadfulness of evils that he can't avoid though he doesn't now see them; or it

may show him needs that he doesn't know he has, and that add to the burden his desires already place on him. Long life: but who can guarantee him that it wouldn't be a long misery?" (Kant, 1785/2005, p. 21f.)

Wealth, knowledge, or a long life may be stipulated as core human aims and values. But ultimately, the concept of happiness cannot be finally closed. Just as above with the „tree“ or with „family“, here „happiness“ is a provisional and open concept. And this is true for all concepts with which we describe the world as well as for concepts on which we base our actions. The *impossibility of permanent epistemological closure* makes concepts temporarily stable and potentially open-ended. Trying to generate closed concepts is subject to permanent failure (Seirafi, 2010). That will become important when discussing organizational concepts. Both rationalistic (rules, roles, etc.), as well as socialized (culture, narratives, etc.) concepts are potentially open-ended and subject to permanent change. Seen that way, organizations (as well as organizational studies) are not solely about stability, predictability, and order, but also and especially about instability, noise, and uncertainty (Tsoukas, 2005b).

Of course, Kant's approach carries some problematic aspects. His suggested general concepts (like space, time, causality, etc.) are limited and somewhat too rigid. They are heavily influenced by the rationalistic, mechanistic, and deterministic understanding of the physics of the emerging era of enlightenment²⁰. Therefore Kant did not take account of other fundamental concepts of sense- and distinction-making like, for instance, *language*. It was the achievements of later development of the „linguistic turn“ which added the important concept of language (and all its details and consequences) to the discussion (Lafont, 1999, p. 5ff.). Nonetheless, Kants basic approach remains in place also within the philosophy of language, namely that concepts allow distinction- and world-making as well as that concepts constrain the possible shape of meaning: „The limits of my language mean the limits of my world.“ (Wittgenstein, 1955/1999, 5.6).

²⁰ something that became highly problematic because Kants used concepts, e.g. those of space and time, are not as universal as they seem. They are much more rooted in the cosmological world view of Isaac Newton. Unsurprisingly, problems arose when Kant's concepts were confronted with theory of relativity (Reichenbach, 1965), let alone quantum physics. The problem here is that Kant refused to admit open-endedness also to his universal concepts like time and space. An understanding of knowledge creation as a dynamic and flexible progress is (especially in the sciences) hardly compatible with Kants view (Popper, 1993, p. 93f.).

We should also take into consideration that Kants position is not what we would call „constructionism“ or „radical constructionism“ today²¹: (1) For Kant, ultimately there remains an objective and pre-given world („things-in-themselves“) though not accessible for human beings (Prauss, 1974). (2) Furthermore, objectivity as an intersubjective, unequivocal sphere remains, because concepts used in the „synthesis“ are stipulated to be universal („transcendental“) and the same for all subjects, i.e. for all human beings. Kants position is based on a deeply universalistic stance. This is a critical objection which has been made by authors as different as Theodor W. Adorno²² or Karl Popper (Popper, 1993, p. 93ff.; 2002, chapter 7). Later critics stated that other, more contextualized, concepts of world-making like cultural or historical preconditions were also central to human world construction, thus allowing variability between different cultures and social fields (Cassirer, 1953).

Despite these legitimate critics, Kant’s point is crucial and it seems to be very implausible to fall back behind its basic meaning. For us, the fundamental insight will be that it is senseless to talk about a „thing-in-itself“ as an object without any relation to a subject (or an observer). That the origin of the world is not simply out there, but lies in our world-construction.

In the next section we will keep following that thought and connect it with other philosophical paradigms as well as with the topic of organizations.

1.3.2 „Conditio Humana“ as the origin of world-construction

Let us try to uncover the origin of Kant’s proposed world-construction. For sure, it is human subjectivity. But how is the human subject situated and which conditions make world-construction necessary? The answer is implicit in Kant’s theoretical and epistemological ideas but was developed more clearly by later existentialists, phenomenological, and „radical constructivist“ thinkers.

²¹ „(Radical) Constructionism“ is an interdisciplinary approach (Glaserfeld, 1995; Maturana & Varela, 1980; Varela, 1991) which goes beyond Kants early reflections. For a short overview see (Fischer & Peschl, 1996).

²² see e.g. Theodor W. Adorno’s objection that Kant’s categories form a „block“ against dynamic world-construction (Adorno, 1970, p. 378ff.).

Humans are not simply born into a „world“ that determines thinking and acting. We are born into an „environment“ (Uexküll, 1909) which is open to interpretation and which we have to make sense of in order to be able to live and to perform actions. The German terms illuminate this aspect even more: world vs. environment are translations of „Welt“ vs. „Umwelt“. We as humans do not face a world („Welt“) but a world *around* us („Umwelt“). The essential distinction lies in the prefix „um“ which labels the world as something that is around *us* as something which receives meaning and factuality only in *relation to the subject*²³.

From an *existentialist viewpoint*, humans, unlike animals, not simply *are* themselves; they have to *become* themselves²⁴. Of course, humans do exist: they *are* („being“). But *what* they are is neither given nor permanently stable. What they are, is a result or an effect of permanent construction processes („becoming“)²⁵. These construction processes aim at stabilizing life, sense and action. But that process is potentially never-ending as there is (again unlike to animals) no pre-determined way in how to live, to interpret the world, or to act. According to existentialist philosopher Martin Heidegger, this is true because humans are locked into the situation of „being-there [Dasein]“ (Heidegger, 1927/1962): we are „thrown [geworfen]“ into existence without any concrete essence or pre-destiny. This generates a pressing necessity to shape and constantly reshape ourselves. As humans we discover ourselves facing a fundamental openness (and senselessness) of our initially given world. And it is up to us to cope with that openness and to make sense as well as to stabilize our existential position.

From an *anthropologist viewpoint* this openness can be characterized as „unsettled instinct [Instiktunsicherheit]“ (Hartung, 2008; Plessner, 1928), i.e.

²³ Emerging in early 20th century biology (Uexküll, 1909), this general idea was theoretically elaborated as „radical constructivism“ (Glaserfeld, 1995; Maturana & Varela, 1980; Varela, 1991) and as „philosophical anthropology“ (Plessner, 1928, 1976).

²⁴ From Heraclitus to Hegel the dialectic interplay between being and becoming has been emphasized by many western thinkers, let alone the whole eastern tradition.

²⁵ In (post)modernity this seems more evident than ever as, e.g. identities, work-definitions, lifestyle, knowledge, etc. are reshaped and multiplied in an unprecedentedly rapid way (Bauman, 2001; Welsch, 2002, p. 189ff.).

humans cannot rely on their pure instincts to survive²⁶. Human beings are not simply part of a „species“ following prescribed pathways. Quite the opposite, humans have no choice than to be involved in the permanent process of becoming and change. This marks a series of paradoxical aspects of the *conditio humana*. Freedom, for example, is not a nice attribute of life but an unavoidable pressure to make decisions: we have no choice than to have a choice. This is also the reason why humans are not only *capable* but *compelled* to construct their world, their subjective and objective reality. This begins with our *understanding* of the world, as we have seen with Kant. His work showed that knowledge is not a mirror of the world but that it originates from the actively engaged subject; creating knowledge is a process of distinction-making.

But just as the observed world, also human action faces radical openness and starts with chaos. Robert Cooper and John Law (in their attempt to understand the dynamics of organizing) called the fundamental starting point of action „happening“:

„In its most callow sense action is a happening; before anything else— before meaning, significance, before it's fitted into any schema—it simply happens... The happening is 'nothing'—or rather no thing, no object, no form—because it doesn't possess any meaning, it is equivocal and symmetrical; it's not yet properly articulated, ordered, organized, not yet been converted into a product or effect. In other words, the happening is a heterogeneous process that has no before or after, no start or finish, no cause or effect: it always remains 'unfinished'.“ (Cooper & Law, 1995a, p. 241f.)

It is easy to see the tight connections between „action as happening“ and our definition of the *conditio humana*. But we here also already see that humans do not only have to make distinctions in their minds. They do not only construct internal and solipsistic concepts. They also generate material objectifications, and collective fields of action. Being „artificial in their nature“²⁷ (Plessner, 1928), humans do not only build cognitive but also material artifacts; not only internal but also external distinctions. Finding themselves in radical openness,

²⁶ There is almost no other life-form being that weak, „unready“, and dependent upon others in its first years of existence, like human beings.

²⁷ author's translation; original citation: „von Natur aus künstlich“

humans have been permanently involved in the „domestication of being“²⁸ (Sloterdijk, 2001). From pre-historical early stages on, humanity was marked not by adaption to nature but by the creation of self-made environments. We build our own „greenhouses“²⁹ (Sloterdijk, 1998) as we, for instance, collectively form social groups, build communities, create habitations, send men on the moon, invent rules of living together, design gigantic cities, systems of justice and technological wonders, inaugurate huge symbolic systems like art, religion, or science. Note that such external constructions of world include the design of human behavior and even human nature itself. We train our bodies (e.g. to „stay in shape“), structure the way we behave (e.g. to know what to do when the city light turns green), domesticate cultural skills (e.g. to be able to write with a pen), and so forth. The philosopher Peter Sloterdijk correctly concludes that today’s tentative endpoint of that self-structuring is genetic engineering (Sloterdijk, 1999).

Coping with their existential condition, human beings construct their world as well as themselves. In drawing both internal and external distinctions we try to bring order and structure to the initially chaotic flux of our environment. To organize is one way in doing so. It is a way to shape, structure, and construct human environment. Hereby, organizations offer („rationalistic“ and „socialized“) concepts like rules, hierarchy, culture, or narratives which make internal and external distinction-making possible. Our next sub-chapter will discuss how such distinction-making allows to temporarily stabilize collective meaning and action within organizational contexts.

1.3.3 Organizing as a mode of world-construction

How are organized fields related to the *conditio humana*? And how do „organizational concepts“ as presented in chapter 1.2 enable actors to cope with that condition? How are organizational concepts able to construct distinctions as well as to temporarily bring order to the radical openness of the world?

²⁸ author’s translation; original citation: „Domesitkation des Seins“

²⁹ author’s translation; original citation: „Treibhäuser“

To deal with these questions, we will take a look at a use-case from the world of hospital care³⁰. a nurse in a hospital deals with highly complex and multifaceted circumstances which would allow many different interpretations as well as many different possible actions. What she does to cope with that openness is that she creates meaning. By bringing „meaning into existence“ she tries to answer the question „what’s the story here?“ (Weick, et al., 2005, p. 410). When entering a room for inspecting a patient she „notices“, „brackets“ and „labels“ the objects and people in the world around her, constructs relations between them, as well as she selects specific actions from an endless pool of imaginable actions. She puts chaotic, heterogeneous, and equivocal „circumstances“ into a more or less ordered „situation“ (J. R. Taylor & Van Every, 2000, p. 275; Weick, et al., 2005, p. 409). She does so by constructing meaning and „making sense“:

„Sensemaking starts with chaos. This nurse encounters ‚a million things that go on‘³¹ and the ongoing potential for ‚clusters of things that go wrong‘ —part of an almost infinite stream of events and inputs that surround any organizational actor.“ (Weick, et al., 2005, p. 411)

To determine these circumstances as a factual situation with reasonable interpretations and courses of action, the nurse has to perform active construction work. The situation is not „given“ to her, but the effect and the result of the application of concepts to a chaotic environment. With Kant we could say that she has to „synthesize“ the „manifold of the given sensuous intuition“. It is her actively turned attention to specific aspects of the complex circumstances which makes the situation. It is this attention which allows her to name, label and give meaning to things in the world. According to organizational theorist Robert Chia, organizing starts with

„an undifferentiated flux of fleeting sense-impressions and it is out of this brute aboriginal flux of lived experience that attention carves out and conception names“ (Chia, 2000, p. 517)

³⁰ The use-case is taken from (Weick, et al., 2005, p. 410ff.).

³¹ Citations within this citation are related to transcriptions of qualitative interviews with the nurse (Weick, et al., 2005).

This is exactly what Karl Weick and others emphasize by stating that „people organize to make sense of equivocal inputs and enact this sense back into the world to make that world more orderly“ (Weick, et al., 2005, p. 414). Of course, this is not simply happening inside an individually isolated subject. There is no purely „private“ sensemaking in organized contexts. In the presented use-case, for instance, it happened that the nurse communicated her (correct) assessment of the situation to other actors. But these actors were not the right addressees within the prescribed communication flow of the hospital. The effect was that „the individual sensemaking (had) little influence on the organizing of care around (the) patient“ (Weick, et al., 2005, p. 413). Only after she had followed the correct organizational pathways of communication her sensemaking had significant (and the desired) consequences within the organization. After that experience she had learned to take specific rules, roles, and communication hierarchy into consideration. She had learned to integrate her individual construction of situations (and actions) into the collective concepts of the organization.

Also on a more general level it is easy to see that individual sensemaking is heavily influenced by the organized context. As the nurse, for example, enters the room she examines the patient, not the flowers on the desk (although she may be interested specifically in flowers as she may cultivate a garden at home). She focuses on essential things instead of on the non-essential ones. And she does so because in that particular situation she is the *nurse* and the person in the bed the *patient*. Her action and distinction-making is based on roles. Furthermore, she has to provide her supervisor (the physician) with information before the next medical round (and it would be quite disturbing if she reports about the condition of flowers instead about the condition of the patient). This is because she takes rules and hierarchal communication into consideration. We can summarize that her world-construction is significantly shaped by „rationalized organizational concepts“ (chapter 1.2.1) like *roles* (nurse, patient), *rules* (the obligation of reporting) and *hierarchy* (the obligation to report to a specific supervisor). The construction (or „synthesizing“) of the situation is guided by these concepts provided by the organizational context.

But complying with these „official“ concepts is not enough to explain what is going on in the organization of this hospital. For instance, think about how our nurse communicates with others. To know which words and expressions to use with which persons (roles) is essential for her daily activities. But how to talk to somebody depends very much on the *organizational culture*. This seems of extraordinary importance, especially in the field of nursing where multiple communication channels are evident: e.g the way of speaking with patients varies tremendously from that of speaking with physicians (Benner, 1994). One situation in the use-case demonstrates how communication culture effects action (Weick, et al., 2005, p. 413). In that situation the nurse tried to tell the physician what was going on with a newborn who required immediate treatment. The doctor did not recognize the urgency of the situation until another (more experienced) nurse „translated“ the story of our nurse. The more experienced nurse did so by comparing the actual situation with a similar case from the past. This case was a well known story in the hospital. With this *narrative* as ordering concept, the doctor was able to re-construct the situation correctly and to initiate the next steps of treatment (Weick, et al., 2005, p. 413). This was only possible because communication and action were based on a specific narrative that offered a way of making distinctions and ordering the heterogeneous elements of the circumstance. As such, the narrative is an organizational concept, too; but rather a „socialized“ than a „rationalized“ one (see chapter 1.2.2).

To conclude, organizing is one way of structuring and canalizing the open-ended flux of human existence. In our short use-case we have seen an example of how organizational actors order the chaotic environment and construct understanding of their world as well as their action:

„Organization is an attempt to order the intrinsic flux of human action, to channel it toward certain ends, to give it a particular shape, through generalizing and institutionalizing particular meanings and rules“ (Chia & Tsoukas, 2002, p. 570)

By looking at the nurse use-case we were able to see that concepts both from „rationalistic“ (rules, roles, hierarchy) as well as „socialized“ (culture, narratives) approaches play important functions in the construction of both world and action.

1.3.4 Summary

As Jean Paul Sartre puts it, human beings are „condemned to be free“ (Sartre, 1948). Other existentialists like Heidegger or anthropologists like Plessner showed us that this is grounded in the radical openness of human existence which forces to make distinctions and to create meaning. This radical openness drives us to become active design engineers of ourselves, our world, and our actions. As „thrown beings“ (Heidegger, 1927/1962) we are obliged to participate in the permanent and never-ending „domestication of being“ (Sloterdijk, 2001). Already Kant showed that objectivity is not given but depends on how the openness we encounter is handled, i.e. which concepts we use - and how we use them - to „synthesize“ the given „manifoldness“. Knowledge about the objective world is only available via such construction processes (Kant, 1781/2003).

Similarly, the organizational theorist Karl Weick claims that the core of organizing lies in „sensemaking“ (Weick, 1995a, 1995b). The construction process of sensemaking begins with „chaos“, i.e. with an „infinite stream of events and inputs that surround any organizational actor“ (Weick, et al., 2005, p. 411). Then actual sensemaking sets in as „labeling and categorizing to stabilize the streaming of experience“ (Weick, et al., 2005, p. 411).

To cope with radical openness is not only the case for individual organizational actors but also for the organization as a whole. Organizations act in an environment which is characterized by radical uncertainty and complexity (Tsoukas, 2005b). They cope both with a hypercomplex external context (changing markets, political constraints, social culture, or emerging technologies) as well as with internal complexity (heterogeneous individual and collec-

tive human actors). This situation forces them to develop mechanisms („concepts“) to reduce uncertainty and to bring order to the chaos of the world³².

Kant proposes different *concepts* that construct order: universal ones like time, space, causality, but also empirical ones like trees, families, or happiness. We suggested that organizations are being constructed by different *organizational concepts*. These concepts not only shape the organization; they first of all bring organizing and the organization into existence. Aims, visions, rules, roles, norms, narratives, or culture are not pinned to the naked puppy we call organization but are *concepts* applied, incorporated, (re-)created, and managed by actors who enact, pattern, and structure organizational practice. The repeated application of organizational rules, the adaption of behavior to organizational norms, the uptake and retelling of organizational stories, the exercise of and subjection to organizational power. They all enact institutions and practices. The effect of these construction activities is a temporarily stable structure which we call organization. Hence, an organization is the result of actors permanently constructing and applying organizational concepts.

It was the purpose of this chapter to formulate the origin of organizations. Such a foundation was traced back to the general human condition which is marked by radical openness, heterogeneity, and chaotic flux; a condition which inaugurates our basic activities, i.e. creating meaning and making sense. This sense- and distinction-making happens on many levels; from the most subjective sphere of individuals all the way up to the macro scale of society as a whole. Organizations play an important part in the middle of these dynamics. In fact, the main social fields of contemporary societies would not be imaginable with-

³² This affects the self-understanding of both traditional (rationalistic, objectivistic) and newer (socialized, constructivist) approaches of organizational studies. Both are - knowingly or unknowingly - determined by (1) a radical uncertainty as their point of departure. Of course, most traditional approaches would deny that, because their world view is marked by rationalistic and deterministic presumptions. Their failure is, so to speak, pre-kantian: they confuse concepts with reality. They make the false presumption that the world is rational, instead of acknowledging that rationality is a general concept that we apply in order to construct the world. Order is the point of arrival, not the point of departure. Both approaches do also (2) explain how organizations structure, order, and „synthesize“ the world. This, on the other side, is neglected by many newer approaches as they put their emphasis (both in their theoretical as well as empirical orientation) on the unstable and fragile character of organizations.

In short, rationalistic approaches deny the origin, socialized approaches the aimed endpoint of organizations. We will try to cover both.

out organizations (Kneer, 2001; Luhmann, 1975): today's politics would not be possible without parties; education not without schools; science not without universities, or research institutions; economy not without firms; and religion not without churches. And what they all, as organizations, have in common is that they are „sensemaking“ devices that enable - on a collective level, mediated by individuals - the creation of order out of chaos. Organizations enable to make distinctions and to act; to temporarily escape the senselessness and radical openness of human existence.

1.4 Conclusion

From the philosophical viewpoint developed in chapter 1.3, an organization is not only a group of people following shared goals, but a *collective device of distinction- and sense-making*, a source of world-construction. To organize is an attempt to cope with the radical openness of human existence. This begins with setting up goals which constrain openness and reduce complexity (chapter 1.1). Goals guide meaning and action of organizational actors who face a potentially open-ended scope of action. But organizations do not only define goals, they also define how to get there, i.e. their goal seeking is structured. In chapter 1.2 we became acquainted with different modes of how organizations are structured. We called these mechanisms of structuring „organizational concepts“ and distinguished between two types of such concepts: „rationalized“ and „socialized“. Scholars who introduced „rationalized“ concepts were inspired by the idea of enlightenment, i.e. that reason and rationality are main vehicles in ordering the world. Hence, organizations are seen as formally structured institutions which are shaped by concepts like hierarchy, roles, rules, bureaucracy, commands, „scientific management“, and so forth. Later on, this approach of organizational studies was criticized as being too narrow. Critics argued that to fully understand organizational behavior other concepts have to be taken into consideration. The reason for this can be seen in the simple fact that organizations are populated by human beings, i.e. that organizations are not only *formal institutions* but also *social practices*. Thus, they cannot be fully put into rationalized patterns or abstract frames. We labeled these other concepts as „socialized“ and

discussed approaches which emphasize informal structures, culture, power, emotions, or narratives. They supplement rationalistic approaches resulting in a more holistic picture of the structuring of organizations.

From our post-copernicanic view in chapter 1.3, organizational structure is not simply given but permanently reproduced. Like humans, organizations do not merely exist in a world. They constantly have to construct and structure their world as well as themselves. From this viewpoint, the research object of organizational studies can be defined as the *concepts, organizations use to make distinctions, to construct their world, to structure their sensemaking, and to guide their action*. Organizations construct, apply, and modify their rationalized and socialized concepts, resulting in a specific organizational practice (figure 1.10).

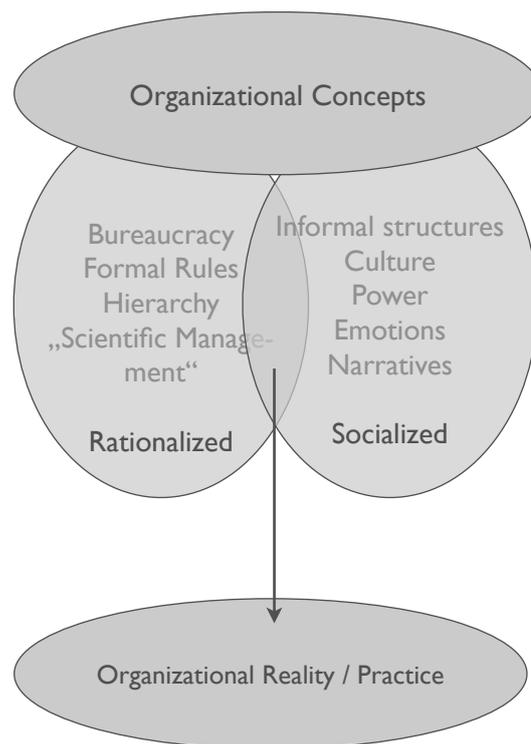


Figure 1.10: Concepts as basic elements of organizations

With this chapter we gained a preliminary grounding and adequate terminology for our understanding of organizations. The central notion of *organizational concepts* will also play an important role in our further inquiry, where we are

going to outline *organizational knowledge* as the driving force behind organizational concepts.

Chapter 2: The relevance of organizational knowledge

Before exploring how organizational knowledge is applied (chapter 3) and created (chapter 4) we will develop a general view on organizational knowledge as grounding of organizational concepts. Hereby, we are going to outline a „strong view“ which makes knowledge the basis for human action. As such its central relevance is given in all social fields, including of course organizations.

2.1 A strong sense of knowledge in social fields

Our inquiry will opt for a „strong sense“ of knowledge, which locates knowledge not only at the sphere of abstract cognition but at the origin of action. In its most basic form, this view was articulated by the social theorists Peter Berger and Thomas Luckmann (Berger & Luckmann, 1969). In their pioneering work „The social construction of reality“ they define knowledge as something that „guides conduct in everyday life“ (Berger & Luckmann, 1969, p. 21). Humans draw on knowledge in order to be able to make sense of situations, to communicate, and to act. Our life is a conglomerate of various situations whereby knowledge helps us to interpret (to „typify“) these situations, and guides action. Actors draw on a „stock of knowledge“ which preserves specific ways of action for specific situations. Furthermore, knowledge is not mere subjective because it can be „objectified“ to „signs“. This allows knowledge to transcend the mere internal and subjective mind of „here & now“ (Berger & Luckmann, 1969, chapter 1.3). By signs (and whole „sign-systems“) I am able to externalize knowledge, as well as to bring external knowledge into the situation. Hereby, language is the most capable sign-system and therefore plays a central role in any society. Complex social systems (like today’s modern societies) are very much dependent on „objectifications“ because they allow to integrate and align shared stocks of knowledge. Communicable knowledge of norms, values, and ways of „problem-solving“ is necessary to provide a more or less stable social world. This presupposition is at the heart of a strong sense of knowledge which emphasizes the crucial relation between a social field and

knowledge (and consequently also that between organizations and organizational knowledge).

2.1.1 Interdependence of ontology and knowledge: theory (Giddens and Bourdieu)

Social fields are locked into a dialectical relation which will turn out to be crucial to understand the connection between knowledge and organizing. A social field consists of social norms and structuring principles which affect the behavior of actors in that field. At the same time social norms are not given, but created by the actors of the field. Hence, a social field is being created in a circular process which the sociologist Anthony Giddens calls „structuration“: the structure is producing actors while the actors produce the structure (Giddens, 2008). Just as in M.C. Eschers „Drawing Hands“ (figure 2.1), social fields are structured dialectically by separate poles being mutually dependent on each other. This implies that the social has no stable foundation on which its existence is based on:

„(S)ocial structure is not a noun but a verb. Structure is not free-standing, like scaffolding on a building-site, (...) it is a relational effect that recursively generates and reproduces itself. (...) It means, for instance, that no version of the social order, no organization, and no agent, is ever complete, autonomous, and final.“ (Law, 1992, p. 386f.)

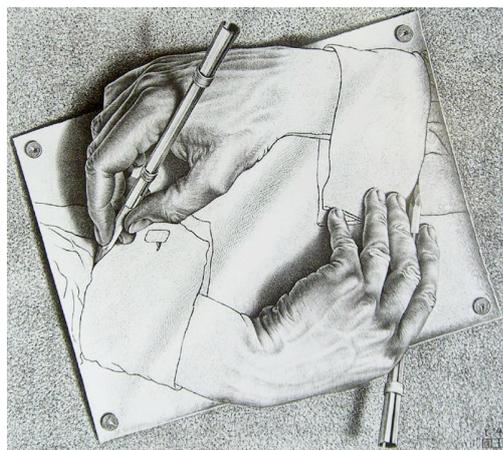


Figure 2.1: „Drawing Hands“: M.C. Escher 1948³³

³³ copyright by the M.C. Escher Foundation (M.C. Escher Company B.V.)

According to another social theorist, Pierre Bourdieu, this is possible because the structure of the objective social field is coupled to the „perception- and distinction-principles“³⁴ of its actors (Bourdieu, 1998, p. 141). These distinction-principles are manifest in the actors‘ mental perceptions as well as they are inscribed physically („incorporated“) into the actor‘ s behavior. Actors are driven by their „habitus“, says Bourdieu; but the habitus of an actor is basically „practical knowledge“ (Knoblauch, 2003) which comprises skills and competencies, cognitive and incorporated knowledge, both „brain“ and „body“. Practical knowledge enables actors to make distinctions, to interpret their world, and to construct meaning. Consequently, it is the ultimate source of action, though a source which is not (always) consciously reflected.

The specific practical knowledge of an actor is dependent on the actor‘ s position within the social field. For example, a laborer uses different distinction principles than a CEO. This leads not only to the fact that these two persons know different things and that they act differently. According to their specific „perception- and distinction-principles“, they also construct their world differently: the worker in metal production constructs the smelting furnace as a complex technical artifact which requires specific operational steps; for the CEO, on the other hand, the furnace is a complex economical factor which requires to be integrated in the process of strategy planning. The differences are determined by their particular positions within the social field of the company and of society in general. What a furnace „is“ and how to deal with it depends on which distinction-principles (which theoretical and practical knowledge) are at place. These distinction-principles are relative to the subject: a worker‘ s sensemaking is different to that of the CEO‘ s. Both have been running through different socialization processes within the company as well as in their life in general. In the course of his life the worker participated in a shared practice of other workers and learned how to view the world as well as how to act in it. From the tiniest distinctions like how to sit, eat, or greet (Bourdieu, 1986), all the way up to how to operate machines and how to interpret the work environment. All this is inscribed into the social field and behavior of a shared habitus. Hence, epis-

³⁴ Author‘ s translation; original citation: „Wahrnehmungs- und Gliederungsprinzipien“

temic distinctions (knowledge) and the ontological field (social practice) are bound together. According to Bourdieu, social reality, habitus, distinction-principles, knowledge, and so forth cannot be separated from each other. Based on their position in the social field, actors are equipped with practical knowledge guiding their daily interactions with others and with themselves; thereby they create and actualize the very social field which in turn again will be their source for practical knowledge. It is a circular process: a social field gains its ontological manifestation (its objectivity) by the epistemological structuring of its actors (its subjectivity), whereby in turn the ontological structure influences epistemological structures. This circular dependency, which Giddens called „structuration“ (Giddens, 2008; Walgenbach, 2006), seems to be a central aspect of social fields (see figure 2.2). There seems to be an „ontological consensus“ (Bourdieu, 1998, p. 144) between knowledge of actors and their objective, inter-subjective, and social world³⁵.

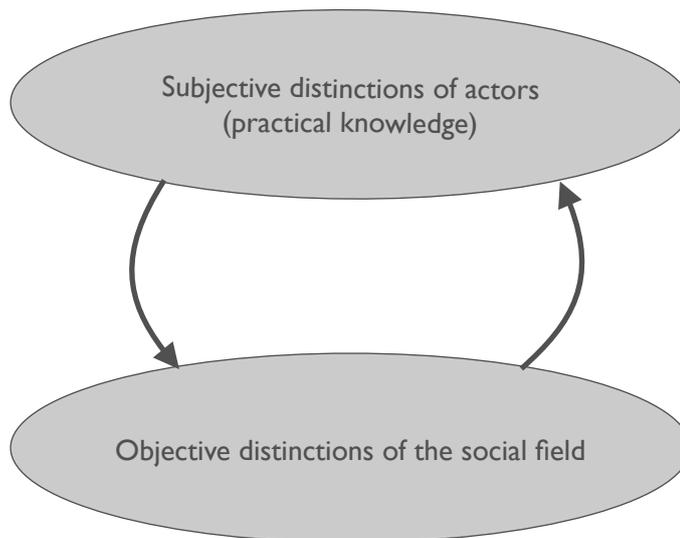


Figure 2.2: Mutual feedback and circularity of social fields

³⁵ In fact, Bourdieu's notion of „habitus“ connects society and individuals (Knoblauch, 2003). The interdependence between subjective and objective, between social field and habitus, or between structure and construction, forms a „structuralist constructivism [strukturalistischer Konstruktivismus]“ (Bourdieu, 1992, p. 155) which is very similar to Giddens „structuration“. The inner relation between the theories of Giddens and Bourdieu (and to that of Actor-Network-Theory which will play a crucial role in chapter 4) is also claimed by John Law (Law, 1992, p. 386).

2.1.2 Interdependence of ontology and knowledge: examples

Let us take a look at two cases which will hopefully exemplify and clarify the interrelation between epistemological and ontological distinctions of a social field.

(1) The X-ray Student

Tsoukas and Vladimirou (2001) provide an example of a medical student who is about to learn how to read and understand X-ray pictures:

„Think of a medical student attending a course in the X-ray diagnosis of pulmonary diseases. He watches in a darkened room shadowy traces on a fluorescent screen placed against a patient’s chest, and hears the radiologist commenting to his assistants, in technical language, on the significant features of these shadows. At first the student is completely puzzled. For he can see in the X-ray picture of a chest only the shadows of the heart and the ribs, with a few spidery blotches between them. The experts seem to be romancing about figments of their imagination; he can see nothing that they are talking about. Then as he goes on listening for a few weeks, looking carefully at ever new pictures of different cases, a tentative understanding will dawn on him; he will gradually forget about the ribs and begin to see the lungs. And eventually, if he perseveres intelligently, a rich panorama of significant details will be revealed to him: of physiological variations and pathological changes, of scars, of chronic infections and signs of acute disease. He has entered a new world. He still sees only a fraction of what the experts can see, but the pictures are definitely making sense now and so do most of the comments made on them.“ (Tsoukas & Vladimirou, 2001, p. 977)



Figure 2.3: Chest X-Ray Photo³⁶

³⁶ <http://www.sxc.hu/browse.phtml?f=download&id=262068> (licensed for free use by HAAP Media Ltd.; for terms of use see http://www.sxc.hu/help/7_2)

Notice the link between epistemology and ontology, and the centrality of knowledge. The actor is constantly developing new knowledge emerging from the flow of information provided by the other experts. Knowledge allows him to make finer and finer distinctions in order to *understand*; and later on, as practicing doctor, in order to *act*. With the application of new knowledge „he has entered a new world“. He may say that he „sees the world with other eyes“, but in fact, what happened was that equipped with these new distinctions, he was able to participate in the construction of an ontological field he shares with others and which enables him to act differently.

(2) *The customer and the CRM*

Similarly, also typical organizational actors are dependent on epistemological distinctions which enable them to construct their world and act in it. Consider this following brief use-case³⁷:

The IT department in an organization establishes a new CRM (customer relationship management) software, which allows the company to store information about customers in a much more detailed and sophisticated way (this enables the system e.g. to automatically prioritize important customers from not so important ones). Once set up, and after being integrated with organization workflows and policies, this new system is a „real“ materialized part of the organization - it is part of the ontological field. Consequently, this new software equips organizational actors with a whole new set of distinctions. It reconstructs the way, sales people or account managers recognize, understand, and act upon their customers. As such, the CRM is an ontological artifact influencing the epistemology of the field, i.e. the distinction-capabilities of its actors. After full rollout these distinctions are not only ontologically manifested as data in the system but also epistemologically in the practical knowledge of organizational actors. As such it gets ontological again, because knowledge results in real action and shapes the social field.

Here again, knowledge enables world-construction: as practically relevant distinction, knowledge actually *defines* the customers and constrains the way organizational actors deal with them. And again, knowledge - this time provided by an organizational expert-system - is the underlying capability of actors in making distinctions and grounding action. Take the new feature that calculates the priority of customers: when successfully internalized by actors and inscribed to the structures of the organization, the calculated priority will not only

³⁷ inspired by (Hatch & Cunliffe, 2006, p. 123ff.)

be an attribute of the customer record in the digital database but will become a distinctive attribute of the customer itself. Informed by the system's data output, the account manager now is capable to see something which literally did not *exist* before. Just as the medical student, also the account manager „entered a new world“³⁸. In this case, again knowledge of actors provide distinctions to construct their organizational field (e.g. the priority of customer X) and serves as basis for action (e.g. next meeting will be scheduled for customer X and not for customer Y). And again, epistemology and ontology are linked together structuring the social field: organizational actors apply their knowledge in order to construct their customers as well as their organization.

2.1.3 Interdependence of ontology and knowledge: entry point of a strong view

The correlation between the ontological and the epistemological structure of social fields marks the entry point of a „strong sense“ of knowledge. Such a view dissolves to a certain extent the separation between knowing actors (epistemology of a social field) on one side, and an independent, „external“ world (ontology of a social field) on the other side. This is to understand distinctions of a social field as connected to the cognitive and pragmatic distinctions of its actors. As such, knowledge has to be seen as a vehicle which enables actors to make distinctions and to construct their world (Tsoukas & Vladimirou, 2001, p. 979). Knowledge is then not only a „resource“ which is produced mainly by, say, „knowledge-intensive“ organizations (Schreyögg & Geiger, 1997), but it is *the epistemological grounding of any organization*. Starting from the insight that organizations are social fields which are marked by a *correlation between their ontological and the epistemological dimension* knowledge gains more relevance than it may seem in the first place. Knowledge then not only is something that can be found *in* the organization, but something that *constitutes* the

³⁸ Of course this says nothing about success or failure of the new distinctions. Say, the CRM would allow only a very inflexible prioritization of customers leading to dysfunctional effects and non-acceptability by the sales persons. The system then would be too „rigid“ and not adaptable to the flexible context of its application. These drawbacks would be challenged with *new* distinctions: if the system is too inflexible (but still has to stay in place) presumably new distinctions will be developed and informal „workarounds“ developed. This may in a longer term evolve to new formal procedures, e.g. to an updated version of the CRM system.

organization. This relevance of knowledge can be revealed, if we show how knowledge is not only the mere representation (of an objective world) but inherently connected to meaning and action. This „strong sense“ of organizational knowledge as well as its inner structure will be further developed in the next chapters.

2.2 A strong sense of knowledge in organizations

2.2.1 Data - Information - Knowledge

A conceptual vehicle which has widely been used in knowledge-management literature is the triad of „data“, „information“ and „knowledge“³⁹. Hereby, *data* is mostly characterized as combination of items - e.g. written words, sentences, or bits and bytes. „Raw“ data is then transformed to *information* if it is successfully connected with meaning - e.g. when an actor is able to interpret (i.e. to „understand“) a sentence. And finally, information becomes *knowledge* when meaning is linked to its use - e.g. when an actor is able to carry out action upon the meaning of the sentence.

Take, for instance, the sentence „The stock market price of OMV is 42.33“⁴⁰. First, we could analyze that string as constituted by items like letters and words which have been combined to a proper sentence. This view is regardless to the meaning of the sentence: it is „pure“ *data*. But when a person interprets and understands this sentence s/he attaches meaning to it - it becomes *information*. For instance, an average adult in modern Western society with average English language skills, and so on, would very likely be able to understand the meaning of „stock market“ or „company“; i.e. the person would be able to relate objective words to subjective meaning. More sophisticated interpreters would additionally understand „OMV“ being an Austrian based company in the energy business. Here again, objective data becomes subjective (and intersubjectively exchangeable) information. Finally, a stock floor trader *knows* the

³⁹ see - among many others - (Boisot, 1995; Nonaka & Takeuchi, 1995; Probst, et al., 2002)

⁴⁰ This example is inspired by students of the class „Elektronisch gestütztes Lern- und Wissensmanagement“ supervised at the Vienna University of Economic and Business Administration in winter term 2008.

significance of that information related to his *context of action*. For him the sentence does not only transport information about a specific price of a specific stock, but also *knowledge* about what to do with that kind of information; for instance, that the price „42.33“ is too low to keep the stock in the portfolio and therefore should to be sold. It is this kind of knowledge which enables the stock floor trader to act accordingly towards his goals.

Let us look at another example. Think of an organization that measures its employees satisfaction related to further education on a 10-point scale. The average result is 8.9 points. According to the data-information-knowledge approach, first of all there is raw *data*. This would be the number „8.9“, or its representation in a graphical chart. *Information* comes up, if someone interprets that number as being the result of a specific survey which lies on a 10-point-scale, is the aggregation of specific questions x, y, z, and so forth. Here, just like in the former example, information is about bringing data into relation with (background) assumptions and other information, i.e. information is *meaningful contextualized data*. Interpretations may be distinguished differently (or even contrarily) by different actors. One actor may interpret the result as pretty good as it lies much higher than the half of possible points, i.e. higher than 5. Others may relate the result to a (to them available) benchmark value of, say, „9.3“, concluding the result as being not satisfying. *Knowledge*, finally, is about how to integrate that information into specific action contexts, i.e. knowledge is *action-related contextualization*. A human resources department, for instance, generates knowledge if the resulted information flows into the organization's strategic decisions. The actor „human resources department“ *knows* what to do with the information that the result of the survey is 8.9. Different grades of distinction making is possible here as well. A very basic distinction making would be given if the department followed simple routines like „if the result is satisfying, action x, if not, action y is carried out respectively“ (notice, the relation to information as the latter defines what actually is to be understood as „satisfying“). Finer distinctions would allow more detailed (re-)actions, like to define different strategical activities for different result ranges.

2.2.2 Syntactic - Semantic - Pragmatic

The data-information-knowledge triad seems to be based upon a more general distinction which can be found in semiotics and philosophy of language. According to semiotic theory, signs can be depicted along a triangle with three different dimensions (Chandler, 2007)⁴¹: a *syntactic*, a *semantic* and a *pragmatic* (see figure 2.5). Syntax is about how the sign is constructed, semantics is about what a sign means, and the pragmatic dimension refers to how the sign is related to action. For instance, the sentence „I now pronounce you husband and wife“ is a sign which is grammatically built correct (syntax), transports a specific meaning (semantics) and has real world implications within the ceremony of a wedding (pragmatics).

Let us now consider that there are different ways in constructing concepts which we use to establish relations to the world. Remember chapter 1.3 which introduced an epistemological stance based on the claim that there are no given „things“ passively „perceived“ by minds, but rather conceptually constructed relations to things and events. We will now try to describe such „concepts“ using the three-dimensional categorization from above. The *syntactic dimension* refers to the outward appearance of a concept - e.g. a written or spoken sentence. According to specific syntactic rules and principles, we build words and sentences, draw pictures, and so forth. That dimension may be identified as the „signifier“ of a concept. Such a signifier, for instance, a word, is characterized by the fact that it points to something else: it is *representational*. But it points not directly to things in an „external“ world. It points to the *meaning* of something. From the viewpoint of linguist Ferdinand Saussure, the (written or spoken) French word „arbor“ is a „signifier“ which represents and points at the „signified“ meaning of a tree (see figure 2.4). This second level marks the *semantic dimension* which refers to the meaning of a concept, for instance, the

⁴¹ The concept goes back to Aristotle's "On Interpretation" (Aristotele, 1984) and was further developed by the pragmatist tradition, e.g. by Charles W. Morris (Morris, 1946) or Charles Sanders Peirce (Peirce, 1913).

subjective perception of a sentence, or an inter-subjectively shared meaning of a sentence⁴².

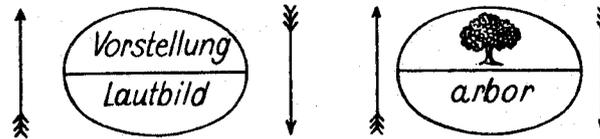


Figure 2.4: Saussure's „sign“: a relation between the signifier, e.g. „arbor“; and the signified, e.g. the conception of a tree (Saussure, 1959, p. 78)

The *pragmatic dimension* relates the meaning of a concept to its use and its context-dependent application. This context is the „practice“ (Wittgenstein, 1953/2006) or „consensual domain“ (Maturana & Varela, 1987) in which a concept is used.

From a semiotic viewpoint concepts would be describable on three levels: *syntactical* constructions (like words, sentences, or other types of signs) are representing meaning on a *semantical* level, and are integrated into human (inter-)actions on a *pragmatic* level. The latter is important because we „do things with words“ (Austin, 1962). Words and sentences do not only refer to subjective (internal) meaning, but also have „performative“ power, i.e. they enable action. Based on the ideas of semiotics, we could say that actors (individual persons but also collective actors like organizations) use concepts which become visible on the three levels of syntax, semantics, and pragmatics:

⁴² Saussure expresses the relation between syntactic and semantic level via the notions of „signifier“ vs. „signified“ (Saussure, 1959). A similar distinction has been proposed by Charles S. Peirce who distinguishes between „representamen“ and „interpretant“ (Peirce, 1913).

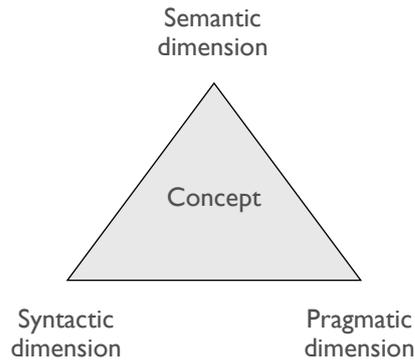


Figure 2.5: Semiotic triangle

At least two important remarks have to be made here.

First, a concept is not a (material or non-material) „thing“, but rather an *effect* of relations. This correlates to our non-essentialist epistemology presented in chapter 1. A car, a stock price, a new organizational rule, a story, or a feeling, does not simply exist out there and then is perceived by us. „Something“ rather is a construction which can take place at different dimensions, i.e. on a syntactic, semantic, and pragmatic level. This is also why „things“ do not even have to exist in a material sense. A unicorn, for example, can be expressed by the syntactically correct notion „unicorn“ or as a picture; it has a semantic dimension (many persons know what is meant by a „unicorn“), and it very well may be related to a pragmatic use (e.g. as way for bringing kids to bed). If a concept (here the unicorn) „is“ anything at all, it is the interconnection of the three dimensions of syntax, semantics, and pragmatics⁴³: it is rather a relation than an entity.

Second, not all three dimensions have to have the same relevance. For example, a feeling has a strong meaning and pragmatic dimension but is diffi-

⁴³ My proposed structure actually does not take the problem of objective reference into account. Peirce recognized this additional dimension and called it the „object“ vs. the mere „interpretant“ - i.e. the object vs. its meaning. For Peirce the „object“ marks the entity to which an „interpretant“ refers (Peirce, 1897/1932). Note that what we call „concept“ is *not* such an „object“, but much more the integrative relation of correlating representation (syntactic), meaning (semantic) and practice (pragmatic). My account therefore is more similar to Saussure's dyadic approach which subsumes „sign“ as the unification of „signifier“ (as the linguistic *form* a sign takes) and „signified“ (as the meaning, or „idea“, the signifier refers to). Whether that idea is related to an object, i.e. claiming ontological status or even truth, is not relevant to Saussure's sign theory. The only thing that may claim some sort of ontological status is the *signifier*: written or spoken words have to exist in order to be interpreted (Saussure, 1959). However, our account extends Saussure's as we add the pragmatic dimension which was later emphasized by Ludwig Wittgenstein (Wittgenstein, 1953/2006).

cult to put into words. An organizational rule, on the other hand, is very easily fleshed out in its syntactic dimension (e.g. as written directive) but may not that easily be integrated into the actor's actual practice. In fact, as we will see in the next chapters, one main challenge of organizations and management is to establish organizational concepts on all three levels⁴⁴.

2.2.3 Representation - Meaning - Action

According to the insights from chapters 1.3 and 2.1, knowledge is to make distinctions as basis for the construction of social reality. Organizational knowledge then subsumes all distinctions which actors use to represent and understand the organizational field, as well as to act in it. With the semiotic triad from above this organizational distinction-making can be located in *representations* (the syntactic dimension), in *meaning* (the semantic dimension), and in relation to *action* (the pragmatic dimension). This is what we have seen at the use-cases above: actors used and created knowledge which enabled them to make syntactical distinctions (words, visuals, explanations in textbooks, computerized information), semantical distinctions (what does this trace on the X-Ray mean?, what is a customer?), and pragmatistical distinctions (how to look at the X-Ray? how to act upon specific customer attributes?). Knowledge provides different ways of distinction-making and enables organizational actors to make a practical sense of the world⁴⁵. Hereby, representation, meaning, and action are *transitional facets on a continuum*. A continuum which is marked by the scope of contextualization of distinction making (see figure 2.6).

⁴⁴ the challenge for organizational studies then, of course, is how to understand and conceptualize organizational knowledge on all three levels, which is also one aim of our inquiry.

⁴⁵ But notice that although pragmatistical distinctions relate knowledge to action, knowledge does not equal action. Knowledge does not determine its real-world application to concrete organizational practice. Hence, organizational knowledge provides the *possibility*, not the *necessity*, for actors to construct specific representations, meanings, and actions in their organizational practice. Instead to support a „too strong“ sense of knowledge where simply „knowledge is action“ we will rather position knowledge as concept with a distance to its concrete application to practice: knowledge is *related* to action, it *not is* action (see next chapter 2.2.4).

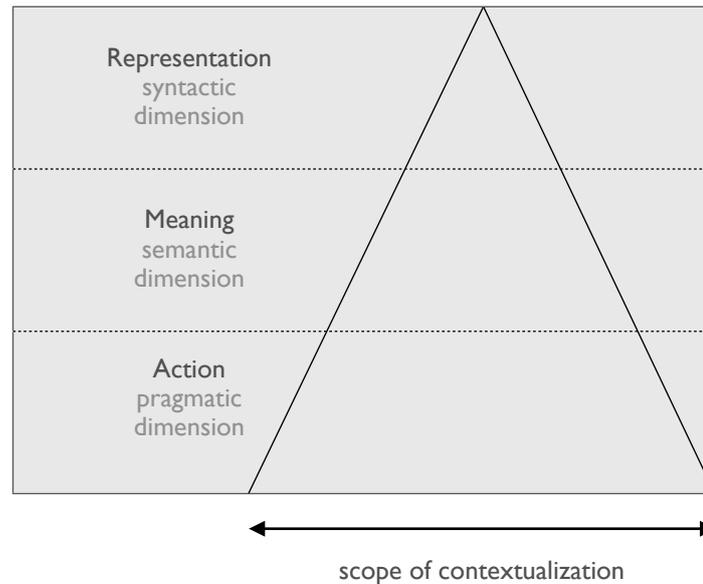


Figure 2.6: Broader term of knowledge⁴⁶

The more we move down to the pragmatic dimension, the more distinction-making is contextualized to the practice of the actor. Remember the stock market example. The possibility of constructing the *representational* distinction „OMV 42,33“ is pretty universal, although still dependent on basic skills like reading and counting. To make *meaningful* distinctions it becomes more specific as actors need to contextualize the representations towards a specific cultural background (like knowledge about economical basics of Western economies, stock markets, etc.). Finally, the *pragmatic* distinction is even more contextualized because actors need to relate knowledge not only to, for instance, a shared idea of stock markets but to their own specific field of action: the floor trader needs to contextualize pragmatic distinctions (which allow a relation to action) to his very specific organizational context of floor trading.

Organizational knowledge is a vehicle for human distinction making and active on all three levels. The more we move down towards „action“, the more contextualized human activity is involved in the generation of distinctions which enable actors to make sense of their world and to act in it. Notice that this view does not define *knowledge* as being totally different from terms like *data* or *information*. We have seen this at the CRM example: a CRM system

⁴⁶ inspired by (Tsoukas & Vladimirou, 2001, p. 976)

provides generalized *representations* which, internalized by the actors, gives them the capability to construct certain views (*meaning*) of their customers. It also enables new ways of specific *action* towards their customers. Organizational knowledge here is a concept which allows distinction-making on all these different levels.

Note also that the triad does not necessarily imply a hierarchy. For instance, the attributed meaning of a concept, i.e. its *semantical* dimension, does not necessarily precede its *pragmatic* use. There is no definite one-way road from representation, to meaning, and then to action. Authors like Ludwig Wittgenstein claim that the meaning of a concept is determined by its use and not vice versa (Wittgenstein, 1953/2006), i.e. we *know* things only because we *know how* to use them. Contrary to that, authors like John Law argue for the importance of representations (Law, 1992, p. 387). To order the world, social relations and knowledge are to be „translated“ into a „durable“ form:

„Imagine a continuum. Thoughts are cheap but they don't last long, and speech lasts very little longer. But when we start to (...) embody them in inanimate materials such as texts and buildings they may last longer. Thus a good ordering strategy is to embody a set of relations in durable materials.“ (Law, 1992, p. 387)⁴⁷

Meaning is intertwined with action, says Wittgenstein; and meaning is only made relevant when materialized in representations, says Law. Views like that of Wittgenstein or Law indicate that distinctions like data, information, and knowledge are analytical concepts which cannot be distinguished in that clear-cut way in real life. It is hard to see how we would refer to a concept as „pure“ data without any appreciation of its meaning (or vice versa). Or how we can refer to things only pointing to their meaning while blocking out their relation to action. In human life all three dimensions converge. This is why we placed the three modes of distinction-making on a continuum.

⁴⁷ Another noteworthy position is held by Sybille Krämer who emphasize the material and representational dimension of human mind and thinking (Krämer, 2008, forthcoming 2011). See also the position of Klaus Krippendorff who highlights „meaning“ as intersubjective „distinction-making“ within the domain of (also organizational) design (Krippendorff, 1984, 1989, 2011; Krippendorff & Butter, 2007).

According to our understanding so far, *knowledge management* is the organization's activity of re-actualizing, re-constructing, and integrating *representations*, *meaning* and *action* (see figure 2.7)⁴⁸. The aim of knowledge management is to support distinction-making on these three levels, and to provide successful dissemination and application to organizational practice. Knowledge ought to flow through the veins of the organization, and to manifest itself in *objective representations*, *subjective meaning* and *inter-subjective action*. Managing that flow of knowledge is a core issue of post-modern management (Nonaka, et al., 2008).

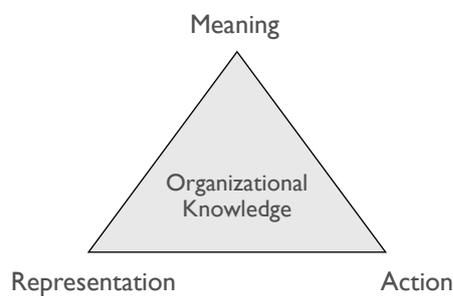


Figure 2.7: Epistemic attributes of organizational knowledge: representation, meaning, and action

2.2.4 Strong, but not too strong: the pitfall of holistic constructivism

Again, we should note that knowledge as foundation of meaning and action does not necessarily terminate in successful or efficient organizational action. Knowledge *enables* actors to make distinctions. But if and how this is actually happening in the concrete organizational practice is up to the practice. Of course, a CRM system provides distinctions on all three levels, for example, on the level of action it calculates and provides a priority on which customers have to be called (chapter 2.1.2). But this does not mean that these distinctions are actually applied in that way in organizational practice; it may, for instance, happen that customers are called in the old way. In such a case the new distinction-making capability offered by the new technology would be ignored (a fate shared by many new technologies in organizations). The X-Ray student (chapter 2.1.2) may construct specific distinctions which are related to meaning („this

⁴⁸ this integrative systematization is very much inspired by JC Spenders distinction of “knowledge-as-data”, “knowledge-as-meaning” and “knowing-as-practice” (Spender, 2008)

shadow means x“) or to action („the proper treatment would be y“), but in concrete practice this may be exposed as being wrong. Finally, the nurse (chapter 1.3.3) made correct meaning-distinctions (the symptoms are x, y, z) but wrong action-distinctions (physician x has to be informed in way z). These distinctions were applied to practice and terminated in unsuccessful results. Consequently, knowledge needed to be modified and again applied to practice. In all three examples the knowledge-flow between representation, meaning, and action did not turn out as coherent and smooth transition but was subject to disturbances, and sometimes lead to unsuccessful and non-desired results.

Our constructivist stance, which has been developed from the beginning of this inquiry, should not make us blind for the simple fact that knowledge and the world are different. We should be careful and avoid the pitfalls of a too holistic constructivism. Just as Kant stated that on one side it is impossible to describe „things-in-themselves“, it is on the other side equally impossible not to presuppose their existence. Knowledge needs a counterpart even if that counterpart cannot be fully „known“; for *organizational knowledge* that counterpart is the *organizational practice*. Hence, although we acknowledge the „strong sense“, i.e. that via knowledge the organizational field is constructed, our sense of knowledge should not be *too* strong. We should avoid to understand the interdependence between the epistemological and the ontological dimension of the organization as a 1:1 determined relation. Of course, knowledge enables actors to make distinctions in order to construct their world and give meaning to its objects. And of course knowledge empowers actors to act since it equips them with the needed distinctions to relate representations and meaning to organizational action. But just as my thoughts of something does not make that thing real, organizational knowledge is not automatically successfully applied and realized to practice in the intended way. Epistemic distinctions of actors do not 1:1 map the ontological field of the organization. Knowledge is *related* to meaning and action but if and how knowledge becomes relevant within a shared practice is dependent on the concrete use of knowledge, not on knowledge alone. Organizational knowledge creation is a critical selection process determining which distinctions remain in the stock of knowledge and which do not.

Not all possible distinctions are always integrated into the practice of the organization. For example, the CRM system may simply not be used, although (at least some) actors would be able to relate representations and meaning to action, i.e. to make pragmatic distinctions. In this case, the offered distinctions became non-relevant to the shared organizational practice, although knowledge was theoretically available and relatable to action.

To summarize, organizational knowledge is related to action, but this does not mean that knowledge simply equals practice. There is a gap between both, a gap between epistemology and ontology of the social field. This is not a flaw in the relation between both but, rather contrary, constitutive for the relation itself. The gap makes possible that new knowledge can be created which is not already integrated in practice, i.e. new distinctions aiming at to change practice. Without that gap, knowledge and practice would be fully synchronized and no knowledge creation or application would be possible. There could be no dynamic interrelation between epistemology and ontology of a field. Ultimately, if both would be equal, the separation would not be necessary at all.

This marks also the very condition of *knowledge management*. To manage the flow of organizational knowledge is to calibrate the epistemic field which enables its actors to interpret their world and to carry out context-relevant action. But this is to say that knowledge may be changed in order to enable a relevant change in practice. This relevant change is all what knowledge management is about (as well as the definition what „relevant“ means in the specific context). And that is only possible if our knowledge is not fully inter-locked with practice. Hence, a theory of knowledge management has to decouple the notion of organizational knowledge (as three-dimensional relation to representations, meaning, and action) from organizational practice.

In the next chapters we will map existing approaches to knowledge management and organizational knowledge and connect them with our framework developed so far. We will explore how all three dimensions of knowledge are compatible with existing knowledge-based literature of organizational studies.

2.3 Managing flow: implicit and explicit knowledge

In their groundbreaking book „The knowledge-creating company“ Nonaka and Takeuchi conceptualized organizational knowledge along the two poles of *explicit* and *implicit* knowledge (Nonaka & Takeuchi, 1995). Explicit knowledge is expressed in representational statements being „about“ something: „know-that“ or „declarative knowledge“. Implicit knowledge, on the other hand, is internalized knowledge about *how* to do things: „know-how“ or „procedural knowledge“⁴⁹. Explicit knowledge appears as codified content, for instance, in documents, books, or databases. Implicit knowledge remains inside the actor, for instance, as a skill and as the ability to carry out action. According to Nonaka and Takeuchi, the key process for creating and leveraging knowledge in organizations is to convert knowledge from one form into another. „Conversion processes“ have to be in place to let data, information, and knowledge circulate from actor to actor („socialization“), from internal to external manifestations („externalization“), within external forms („combination“), and again from an explicit state back to the actor („internalization“).

The authors illustrate these conversion processes by giving a famous example about bread baking (Nonaka, 1991, p. 98f.; Nonaka & Takeuchi, 1995, p. 100ff.). To learn how to bake bread one could acquire knowledge about bread ingredients, mixture ratios, techniques, and so forth. This information may be gathered from instruction guides, books, and so forth. Doing so, a person would (at least try to) „internalize“ explicit knowledge from the book to his/her internal system, i.e. s/he would convert explicit to implicit knowledge. Of course, it is difficult to learn how to bake bread in that way. In fact, professionals acquire the skill of bread-baking not from books (alone) but learn from other human beings. In this case knowledge acquisition mostly is accomplished in a social setting: from a master to an apprentice⁵⁰. Hereby, the master *shows* something while the apprentice *imitates*: knowledge is acquired through „indwelling“ (Nonaka, et al., 2008, p. 20). According to Nonaka and Takeuchi, this act of

⁴⁹ The distinction between „know-that“ and „know-how“ was introduced by the philosopher Gilbert Ryle (Ryle, 1949), that between explicit and tacit knowledge by Michel Polanyi (M. Polanyi, 1967).

⁵⁰ Which is the prototype of the „socialization“ conversion (Nonaka, et al., 2008, p. 20).

„socialization“ transfers implicit knowledge from one person to another. Another type of conversion comes up if someone aims at constructing a bread-baking machine (or at writing a book about bread-baking). In such a case the implicit knowledge which is transferred from the master to the apprentice has to be „externalized“ and to be converted into a codified form. This is to convert implicit to explicit knowledge, for example, by linguistically („metaphorically“) describing all the detailed steps necessary to bake bread. This explicit knowledge then can be „combined“ with other knowledge resources like mechanical and electronic features of machine parts in order to finally build a bread baking device.

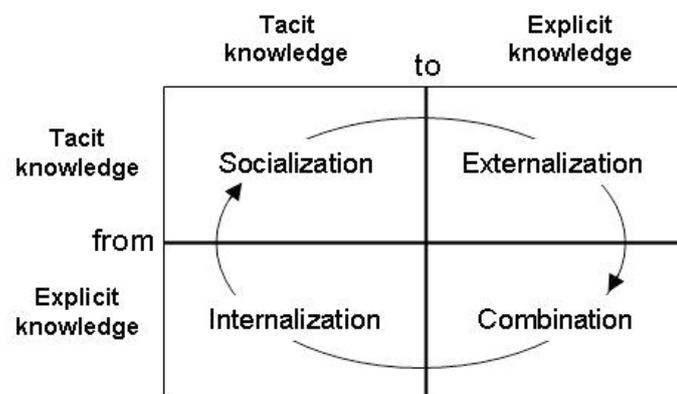


Figure. 2.8: Knowledge conversion processes (Nonaka & Takeuchi, 1995)

According to Nonaka and Takeuchi, organizations have to provide purposeful and efficient conversion processes to generate a „flow“ of information which enables the creation and application of the organization’s most important resource: useful knowledge. Their approach converges with our strong sense of knowledge as distinction-making, whereby explicit knowledge is situated towards the top and implicit knowledge towards the bottom of the continuum:

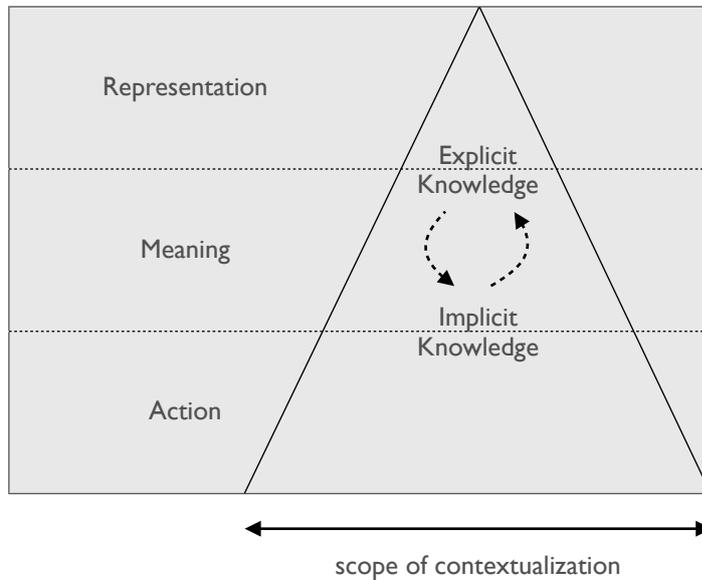


Figure 2.9: Nonaka and Takeuchi's knowledge distinctions applied to our broader term of knowledge

Nonaka and Takeuchi claim that representational distinctions have to be convertible to allow construction of meaning and relation to action. Only through becoming „implicit“, knowledge can be related to action and finally be applied to practice. On the other side, also implicit skills have to be explicable as representations and meaning in order to be distributed and shared throughout the organization.

2.4 Knowledge as organizational resource of individual and collective distinction-making

Other approaches in organizational studies focus on knowledge as being a „resource“ of creating results like products, services, money, and so forth. No matter how limited some of these typifications may be - e.g. because they only seem applicable to firms, or exclusively to the individual level of actors - we will see that every one of them is connected to the 3-level distinction-continuum of our strong sense of organizational knowledge.

2.4.1 Representation: knowledge as commodified resource

Take, for example, the „first stage“ of knowledge-management literature which was heavily influenced by the development of information technology

(Scharmer, 2009, p. 69). Here, knowledge (or rather the opportunity of knowledge management) was mainly seen in context of the digital infrastructure of the organization. The main challenge of knowledge management was seen as how to store information independently from fluctuating actors and to make it widely accessible throughout the organization, i.e. making implicit knowledge explicit. Knowledge management has to provide technical and social structures to move data to where its „absence has created problems“ (Spender, 2008, p. 169). Hence, knowledge is seen as a convertible resource, a „commodity“ which has to be distributed optimally⁵¹. This view certainly focuses exclusively on the representational level of knowledge. Nonetheless, it is a matter of organizational knowledge and not only of „data“. As representational distinctions basically allow to construct meaning and relation to action (remember the CRM example), they form a legitimate dimension of organizational knowledge (management).

2.4.2 Meaning: knowledge as individualized resource

Another approach is to narrow organizational knowledge to „expert knowledge“. Peter Drucker, for instance, describes modern organizations as being unprecedentedly dependent on a „plurality of expert knowledge“ (Drucker, 1993, p. 74ff.) which has to be imported mainly through hiring the right people. This view correlates with other definitions which take knowledge to be a „resource“ embodied in actors (Patriotta, 2003, p. 25). Organizational knowledge then is reduced to „human capital“ which is managed by recruiting activities and „competence management“ (Choo & Bontis, 2002). Basically, there is nothing to hold against those views as it is obvious that in today’s fast developing global societies expert knowledge has become an important and central resource. Its contribution to reach organizational goals cannot be underestimated. Analysts, consultants, software developers, and even retail salespersons draw from knowledge as a set of distinctions to make sense of (as well as to act in) their organizational practice. Analysts and consultants may use their expert

⁵¹ Designing knowledge management systems can be rather „technological oriented“, i.e. optimized towards creation and retrieval of knowledge itself, or „human oriented“, i.e. optimized towards creation and retrieval of knowledge holders (Maier & Hädrich, 2001).

knowledge (from „know-how“ like analytical skills, to „know-that“ like knowledge about markets or best practices) to reveal market opportunities and thus to construct action-relevant meaning. Software developers use their knowledge about programming languages, algorithms, or the newest features of digital tools, to understand and solve given problems. In terms of our definition of knowledge the highly-skilled programmer is able to generate finer (or rather different) distinctions than someone who lacks her specific knowledge. Her expert knowledge enables her to analyze a specific problem in a specific way (i.e. a specific way to construct meaning, to turn „circumstances“ to „situations“), and to come up with a specific solution (i.e. she constructs relations to possible organizational action). When her knowledge-based distinctions are successfully integrated to practice she ultimately contributes to the achievement of organizational goals (e.g. the goal to provide solutions for the customers). Even retail salespersons use their knowledge about typical customer behavior and past experiences to construct finer distinctions on (future) customer behavior (Nonaka, et al., 2008, p. 138ff.)⁵². This knowledge then enables them to make more effective item orders in the future.

In all these cases, knowledge enables actors to construct distinctions. These distinctions allow them to understand their world and (directly or indirectly) to contribute to the product, service, or „value“ of the organization. Knowledge-based distinction-making equip organizational actors to carry out actions which contribute to the achievement of organizational goals. This is even the case for externally codified and „dehumanized“ knowledge like acquirable patents, market reports, program code, books, or imported data in a CRM database. All these „distinctions-as-representations“ are organizational knowledge, since they are relatable to meaning and action. *If* and *how* these representations trigger purposeful action depends on its application in organizational practice (what will be discussed in chapter 3).

⁵² see also our use-case from Seven-Eleven Japan in chapter 10.

2.4.3 Action: knowledge as processual resource

We may also distinguish between knowledge as part of the product or service, and knowledge as guiding the organized process which creates that very product or service. Knowledge then not directly merges into a product but provides a collective „architecture“ (Henderson & Clark, 1990), which is available as explicit and implicit „routines and interactions“ (Blackler, 1995, p. 1025). Typical examples would be role descriptions, routines, organizational command structures, meeting rules, decision making policies, and so forth.

A similar distinction has been made between „product innovation“ and „management innovation“ (Hamel, 2002, 2007). Put shortly, product innovation makes the *product* better whereas management innovation makes the *organization* better⁵³. To thrive *product innovation*, knowledge about resources has to be created or modified. For example, for an organization to develop and produce MP3 players these resources could be the MP3-encoding algorithms, audio technology, displays, internet-protocols, and so forth, as well as non-technical knowledge about markets, or social structure of customers. To thrive *management innovation*, on the other side, procedures, rules, and policies („architecture“) have to be created or modified. This results, for example, in realignment of command structures, or in redesigning internal communication. The first type of innovation is directly related to the product or service, the second one deals with the way of how actors and resources generating the product or service are organized.

This is also prevalent in Edith Penroses economical theory of the firm (Penrose, 1959). Penrose argues that the mere availability of resources cannot sufficiently explain a firm's success. It is much more the way *how* these resources are combined, integrated, structured, and applied which distinguishes the firm from others and generates competitive advantage. The uniqueness of a firm is constituted by how it collectively understands its available resources, the possible services they could render, or the markets in which they could thrive. It is, for instance, one thing to have access to resources like transistor-technology, flash-storages, LCD displays, online-sales-infrastructure, and so forth; but a dif-

⁵³ And consequently of course also aims at making the product better.

ferent thing to assemble them to a holistic service which provides stylish MP3 players seamlessly embedded in an online music store and business model:

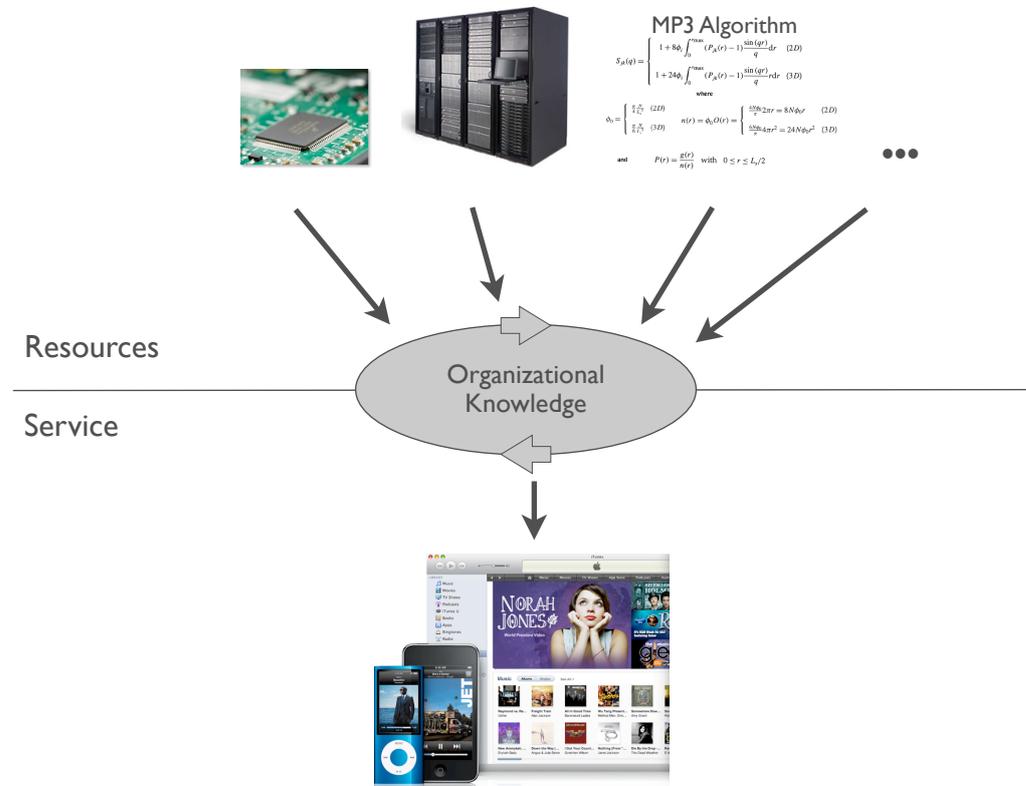


Figure 2.10: Organizational Knowledge according to Penrose (exemplified along Apple's® Portable Music Service)

Following Penrose, competitive advantage is dependent on organizational knowledge because the latter represents the connecting link between *resources*, i.e. the „input“ of the production process, and *services*, i.e. the „output“ of the production process. In today's digitalized and globalized environment with ubiquitous information access and worldwide supplier-networks there are only a few sectors where firms may distinguish themselves only on basis of their used material and non-material resources. As seen in the MP3 use-case, the unique value of a product or service is added in the way of how resources are organizationally combined. This „way“ can be understood as collective organizational knowledge which „bridges the gap between the resources acquired and the services (organizations) provide“ (Spender, 2008, p. 169). Penrose very early identified that these *differences* constitute the pillar of a firms success as it enables an organization „to put its resources to particular uses – *it is a distinc-*

tive way of thinking and acting in the world“ (Tsoukas & Vladimirou, 2001, p. 981).

It is this type of trans-individual know-how which marks the distinctive *organizational* character of knowledge. Here the focus is directed towards the organizations processes, rules, routines, stories, shared understandings, and collective know-how. Knowledge then is „organizational“ not because it relates representations, meaning, and actions only to individuals, but to the organization as such. In fact, individual knowledge is only able to become part of the organizational sphere if its embedded in the trans-individual processes of the organization (F. B. Simon, 2007, p. 35)⁵⁴.

To conclude, the way how organizations organize is accumulated in the shared organizational knowledge actors can draw from to make distinctions (on the three levels of representation, meaning, and action). Which *types* of organizational knowledge are at work on this processual level will be examined in chapter 3 and connected to the different paradigms in organizational studies from chapter 1. Hereby, *rationalized* views try to understand processes as a knowledge stock of formal routines or rules (chapter 3.1), whereby more *socialized* views detect organizational processes as informal narratives and stories circulating within the organization (chapter 3.3).

2.5 Conclusion

Let us briefly summarize the steps made in chapter 2:

- (1) Knowledge constitutes the epistemological dimension of a social field (chapter 2.1).
- (2) This is because it enables actors to make distinctions in order to understand their world and act in it.

⁵⁴ System theory approaches of organizational research drive this even further. According to an „autopoietic“ understanding of organizations, members of the organization are placed to the „environment“ of the system (i.e. humans are not „part“ of the organization but part of the „environment“ of the organization). Members become interchangeable and only relevant insofar as their communications and actions are „coupled“ to the organizations processes (F. B. Simon, 2007, p. 35). The organization then does not consist of its members but of its own operations: organizations are „closed systems“ (Baecker, 1998; Luhmann, 1995; F. B. Simon, 2007).

- (3) This opens up the possibility of a „strong“ knowledge-based view on organizations: organizations are social fields in which knowledge as distinction-making is active on three levels: representation, meaning, and action (chapter 2.2).
- (4) The general theoretical framework outlined in (1) - (3) turned out to be compatible with existing approaches to organizational knowledge, like Nonaka's & Takeuchi's knowledge classifications (chapter 2.3), as well as with the idea of knowledge being an organizational „resource“ on both individual and collective levels (chapter 2.4).

Note that our definition of knowledge as distinction-making process which enables world-construction and action is very close to that of organizational concepts from chapter 1. There, we said that organizational concepts (rationalized and socialized) enable exactly what we said about knowledge in chapter 2, i.e. distinction-making, understanding of the world, and relation to action. Our further inquiry will be driven by the idea that organizational knowledge (as outlined in chapter 2) is constitutive for organizational concepts and structure (as outlined in chapter 1). Hereby, we will follow scholars of organizational studies who recently introduced elaborated approaches to understand both the *application* (Haridimos Tsoukas, chapter 3) as well as the *creation* (Gerardo Patriotta, chapter 4) of knowledge in organizations. Outlining their approaches will give us further insights of how constitutional concepts (like rules, roles, stories, resources, skills, etc.) are bound to the epistemological dimension of the organization. In fact, both authors implicitly claim that we could neither understand the application, nor the creation of organizational concepts without the notion of knowledge. As we will see, both Tsoukas and Patriotta propose novel views, reformulating the structuring principles of organizations as organizational knowledge. The „capability“ of organizations to draw distinctions, to stabilize meaning, and to act is bound to knowledge. This culminates in the general definition provided by Haridimos Tsoukas:

“Organizational knowledge is the capability members of an organization have developed to draw distinctions in the process of carrying out their work” (Tsoukas & Vladimirou, 2001, p. 976)⁵⁵

The next chapters try to reformulate organizational concepts as organizational knowledge, thus introducing a *knowledge-based view on organizations*. This also opens up a new perspective. By interpreting the organization as being constituted by knowledge we will be able to see challenges and problems of organizations in a new light, i.e. to interpret issues in organizations as epistemic issues.

⁵⁵ Having said that, we should also accept the *limits* of the introduced strong sense of organizational knowledge. Although the crucial importance of knowledge in organization forms both the assumption and the field of this inquiry, we should remember that not all before mentioned concepts, which create the organization (see chapter 1), can (or should) be covered by and traced back to organizational knowledge. Our inquiry will not opt for some kind of knowledge-centrism which reduces everything in and around organizations to knowledge. I would not even choose to explain, e.g. expert skills or organizational rules by the concept of knowledge alone as other factors like social pressure, power, or culture may be involved as well. However, knowledge in the strong sense is a *necessary condition* for organizations. Trading off limits against importance of a knowledge-based view, we could conclude that on one hand knowledge for sure is not the only constituent of organizations, but on the other hand no organization would be imaginable without it. This is because no social field is imaginable without its epistemological grounding.

Chapter 3 - The application of organizational knowledge

In chapter 2 we emphasized the relation between the epistemological and the ontological dimension of organizations. We concluded that, on different levels, knowledge is able to provide epistemological distinctions allowing organizations (and organizational actors) to make sense of the world and to act in it. But the fact that knowledge shapes organizational practice does not imply that knowledge and practice are the same. In contrary, the relation between knowledge and practice is marked by a fundamental gap which will become central for our further inquiry. The following chapter aims to show how the application of knowledge is open to contingency and plurality, and that knowledge does never perfectly fit to its application context. This is discussed along with Haridimos Tsoukas' approach which will be connected to our hitherto developed ideas⁵⁶.

This chapter will (a) complete our understanding of organizational knowledge as distinction-making by connecting chapter 1 (organization as rationalized and socialized concepts) with chapter 2 (knowledge as distinction-making). We will further (b) define a fundamental gap between *organizational knowledge* and *organizational practice* which has important consequences for the creation of knowledge (chapter 4) and consequently for an organizational epistemology (part III).

⁵⁶ The following definitions of different types of knowledge and their relation to organizational practice are mainly inspired by the collected writing of Haridimos Tsoukas carried out in an edition of collected papers named „Complex knowledge: Studies in organizational epistemology“ (Tsoukas, 2005c). Furthermore, Tsoukas is one of very few who uses the term „epistemology“ in regard to organizations. Nevertheless we are going to understand this term differently then he does. Another rare use of the term can be found at Krogh's, Roos' and Slocum's „Corporate Epistemology“ (Krogh, Roos, & Slocum, 1994).

3.1 Rationalized Concepts: Organizational knowledge as „theory“

3.1.1 Knowledge as generalized theory

From a „rationalistic“ standpoint in organizational studies (see chapter 1.2.1) a „strong sense“ of knowledge would define knowledge as an explicitly encoded frame which structures the distinctions and actions of organizational actors. Such knowledge would appear as formal rules, roles, and routines which ought to be applied by organizational actors. According to the organizational theorists Haridimos Tsoukas and Efi Vladimirou, all such formal knowledge is in its core structured as propositional statements⁵⁷; then organizational knowledge is „propositional knowledge“ (Tsoukas, 2005a):

„An organized activity provides actors with a given set of cognitive categories and a typology of action options. (...) Such a typology consists of rules of action – typified responses to typified expectations. (...) Rules are prescriptive statements guiding behavior in organizations and take the form of propositional statements, namely ‘If X, then Y, in circumstances Z’.“ (Tsoukas & Vladimirou, 2001, p. 979f.)

In chapter 2 we said that knowledge in a „strong sense“ constitutes the distinctions of the organizational field. How does this happen with „propositional knowledge“ as introduced by Tsoukas & Vladimirou?

The idea is that behavior is not arbitrarily performed by isolated individuals but rationally organized around generalized categories. These categories form a „stock of knowledge“ which shape the subjective distinctions of actors as well as the objective, „institutionalized“ structure of the field (Berger & Luckmann, 1969). From such a view, coordinated activity is possible because „individuals draw and act upon a corpus of generalizations in the form of generic rules produced by the organization.“ (Tsoukas & Vladimirou, 2001, p. 979).

A service call center, for example, is organized around general categories (a set of typical customers with typical issues which are to be solved in typical ways). The purpose of these general categories is to be able to cover all (or at least most) possible particular events within the call center and to regulate hu-

⁵⁷ A similar approach, which points at routines as the core of organizational knowledge (and which will not be discussed here) is provided by Nelson and Winter (Nelson & Winter, 1982).

man action. Without any such conceptualized, rationalized, and explicable set of general distinctions no manageable modern organization would exist:

„On this view, therefore, organizing implies generalizing: the subsumption of heterogeneous particulars under generic categories. In that sense, formal organization necessarily involves abstraction. Since in an organization the behavior of its members is formally guided by a set of propositional statements, it follows that *an organization may be seen as a theory* – a particular set of concepts (or cognitive categories) and the propositions expressing the relationship between concepts.“ (Tsoukas & Vladimirou, 2001, p. 980)

To use the notion of „theory“ seems in fact being reasonable because knowledge always involves some kind of abstraction: knowledge as theory does not refer to something purely particular, i.e. it is not simply reporting about singular events. For instance, the simple theory „water boils at 100°C if the surrounding pressure is at 1 bar“ does not report about any specific case where such an event (water boiling at 100°C at 1 bar) was accidentally observed. It claims to be valid for *all* particular instances of „water“. This is similar to a formal organizational routine for call center agents (e.g. „if an agent receives a call, then the calls has to be answered after 1 minute at the latest“) which usually also is not restricted to a specific employee but ought to be applied by *all* (or at least by *all* of one group of) agents. Both the categories („X, Y, Z“) as well as their relationships („if“, ”then“) are *generalizations*. Only as generalizations they have the capacity to *typify* behavior, situations, and actors. If an organizational rule would *not* be generalized, then it would only point to a *singular* instance. This would undermine the very idea of a rule, because rules are to be applicable to a *plurality* of possible cases in order to reduce complexity and make organizations more „organized“. Equipping rules with only singular terms would make them applicable only to singular events. Then a rule would be restricted to only *one* specific situation, applied by only *one* specific agent, and carried out only *once*. In the next situation one would need to set up a new rule. Strictly speaking, the rule would not be a rule anymore. It would rather be transformed to a direct command which *determines* behavior instead of *guiding* it. To draw the analogy to science: the rule would only be one of millions of „protocol sentences“ rather than a structuring and generalized statement. When lacking the

characteristic of generalization, rules would multiply the very chaos they were supposed to reduce.

In fact, it is hard to imagine something like singular categories at all, i.e. categories distinctively referring to a unique entity in the world. The reason for this is not simply that the world is complex and that there „are“ no singular categories „out there“. The reason is that the meaning to which a category refers to is potentially open-ended. For example, „if the customer IBM calls Andy tomorrow at 12:15, then the time-to-solve of the given problem should not take longer than 15 minutes“ would be a pretty specific and non-generalized rule. It would not be applicable if „Dell“ calls (which is a likewise large and important customer), or if „Bill“ (another call center agent) picks up the phone, or if it would be 13:00, etc. However, it is not that singular as it seems at first since every representation in that rule is still open for different meanings. Both „the customer IBM“ and „time-to-solve of the given problem“ are contingent. „IBM“ is contingent to how one understands „IBM“ and, in this specific case, how the call center agent identifies a phone caller as related to IBM (as it, strictly speaking, is never „IBM“ calling, but another person). Also the meaning of the category „time-to-solve“ cannot be unequivocally determined: for example, does the time-measurement begin before or after the phone rings⁵⁸?

What this (constructed) example indicates is that still the most specified rule contains generalizations, i.e. - according to Tsoukas and Vladimirou (Tsoukas & Vladimirou, 2001) - the subsumption of heterogenous particulars (the manifold organizational practice) under generalized concepts (more or less abstract categories like, e.g. „agent“ or „IBM“). And this is true for all propositional knowledge. Hence, we can summarize two important analytical remarks about propositions: (a) propositions have to be generalized in order to be (useful) propositions for the organization. A non-generalized proposition (if possible at all) would ultimately be its one and only instance. And then it would fail to reduce complexity and to pattern recurrent behavior efficiently. Generalization

⁵⁸ Of course, this does not mean that such a directive (or any other more general rule) is not executable. The mentioned instruction may be very well carried out by „Andy“ if Andy is an experienced operator and knows the context of the organization. Andy would not need all the details and context-sensitive information like what „IBM“ or what „time-to-solve“ means. Thus, it would not be useful to incorporate all details to the instruction.

is the strength and the very vehicle of propositional knowledge. (b) Propositions are not constituted by closed (distinct) but by open-ended (generalized) concepts⁵⁹. This makes them open to interpretation as we saw with the categories of „IBM“ or „time-to-solve“. Propositions are open-ended and cannot always be unequivocally interpreted. Note the dialectical relation between (a) and (b): it is not the whole truth to say that on one side propositions establish generalized distinctions, although, on the other side, they turn out to be open to interpretation. They are open to interpretation *because* they are generalized.

To talk about propositions is to view organizational knowledge as „theory“ because it, just like scientific theories, aims at subsuming heterogeneous particularities under general concepts. According to such a rationalistic view, the implicit motivation of knowledge is to order heterogeneity, to rationalize perception, to categorize the world, and ultimately to unequivocally guide action. This rationalized view of organizing and organizational knowledge can be traced back to the roots of organizational theory, which basically started with Max Weber.

3.1.2 Max Weber: organizing and scientific rationality

Understanding organizational knowledge as propositional „theory“ is related to the scientific approach to knowledge. Just as scientific inquiry strives to generate, apply, and falsify theories and hypotheses, modern organizations generate, apply, and falsify their formal roles, rules, and routines. Looking back to the dawn of organizational theory we can already sense the intrinsic link between the logic of science and the logic of organizations. The work of Max Weber - the „father of modern organization theory“ (Schreyögg, 2008, p. 30) - is based on the assumption that rationalization and formalization of concepts and rules constitute both the scientific paradigm as well as the idea of modern organizations (Weber, 1946, chapter VIII). According to Weber, optimal organizational decisions and actions are carried out „without regard of persons“ and „according to calculable rules“ (Weber, 1946, p. 201). Once roles, rules, and goals are

⁵⁹ See our epistemological discussion in part II. Here, in the discussion of organizational theory, this nature of propositions is reflected especially in the dichotomy between rules and their instances (Schauer, 1991; Tsoukas, 2005a, p. 78).

defined properly, any non-functional bias ideally is removed from the equation. For example, when a new position is to be filled in an organization the decision maker is (again ideally) free from any non-rational factors:

„all other circumstances being equal, it is more likely that purely functional points of consideration [*rein fachliche Gesichtspunkte*, K.S.] and qualities will determine his selection“ (Weber, 1946, p. 201)

Webers analysis results in a view that makes the organization („bureaucracy“) calculable, analogous to an objectively isolated natural phenomena described by a scientific theory. The description of the phenomena is to be free from personal and subjective bias, it should be as „objective“ as possible. And so should also the processes of organizing: “When fully developed, bureaucracy also stands, in a specific sense, under the principle of *sine ira ac studio*.” (Weber, 1946, p. 215). According to Weber, organizational knowledge (as theory), similar to scientific theory, ought to be determined by rational reasons alone. Only the latter would enable the bureaucratized organization to guarantee „calculability of results“:

„Calculability develops the more perfectly the bureaucracy is ‘dehumanized’, the more completely it succeeds in eliminating from official business love, hatred, and all purely personal, irrational, and emotional elements which escape calculation. This is the specific nature of bureaucracy and it is appraised as its special virtue.“ (Weber, 1946, p. 215)

As already discussed in chapter 1, this ideal type of rationalized and standardized human behavior would later become further applied, for instance, in Frederick Taylors approach of „scientific management“ (F. W. Taylor, 1998 [1911]). And although in organizational studies the rigid expectation of an organization being literally „calculable“ has been given up, the idea of a reliable and precise conceptual framework which rationally and efficiently structures collective behavior (as rules, directives, procedures, „processes“, and so forth) still shapes the understanding of organizations and management (Tsoukas, 2005b).

3.1.3 Theory in action: rationalized organizational knowledge applied

We should be aware that the view of organizational knowledge as propositional „theory“ is not restricted to the early industrialized world of Max Weber or to tayloristic assembly lines. It is at work at the core of all today’s organizations (Tsoukas & Vladimirou, 2001, p. 980). Observing a telephone call center of a mobile phone operator in Athens, „theory“ as described above was found in many different forms (Tsoukas & Vladimirou, 2001, p. 980ff.): as a set of working instructions delivered in induction training; as information about how to answer telephone calls; as paper manuals and computerized information about the different products and services; and as formalized expert systems about how to solve possible issues customers bring with them when calling. All this knowledge can be understood as „theory“ of the organization: it frames, constrains, and orders the activity of the 250 employees. It aims at generalizing the distinctions on which the organization and its members draw in order to carry out their actions. We need not to fall back to a radical Weberian understanding of rational rules and roles to see that without these distinctions, i.e. without knowledge as „theory“ the organization would be „chaos“. Certainly, type and aims of an organization influence the extent and importance of knowledge as propositional „theory“. A „machine bureaucracy“ (like large standardized international services, e.g. McDonalds) demands more rationalization and rules as the „adhocracy“ of small consulting firms or think tanks⁶⁰. However, it seems hard to imagine a permanent functioning organization without any rationalization and generalization, i.e. without any „knowledge-as-theory“.

The term „theory“ should not provoke the misleading conclusion that organizational knowledge as a generalized abstract set of concepts is totally detached from the real world of organizational practice. It would also be misleading to reduce the existence of rationalized concepts only to externalized *representations*, i.e. to define them as stored only in files, handbooks or digital databases. Already Max Weber reminds us that modern bureaucracy requires actors to *in-*

⁶⁰ see Mintzbergs “structures in fives” model (Mintzberg, 1983); for further examples and remarks on the relation between type of organization and the extent of rationalization, see (Hatch & Cunliffe, 2006, p. 117)

corporate the given set of rules and directives which are imposed on them. For Weber modern organizations are „among those social structures which are the hardest to destroy“ (Weber, 1946, p. 228). This is not the case because of written rules, but because of the effective internalization of these rules. According to Weber, organizations are „practically unshatterable“ (ibid.) not because propositions appear as documented directives, but because organizational actors incorporate them. In Webers words, an actor (an „official“) has to enforce „discipline“, which

„refers to the attitude-set of the official for precise obedience within his *habitual activity* (...) This discipline increasingly becomes the basis of all order, however great the practical importance of administration on the basis of the filed documents may be. The naive idea of Bakuninism⁶¹ of destroying the basis of 'acquired rights' and 'domination' by destroying public documents overlooks the settled orientation of man for keeping to the habitual rules and regulations that *continue to exist independently of the documents.*“ (Weber, 1946, p. 229, my emphasis)

Note that „independently of the documents“ does not defer rules to a transcendent level but to the heart of organizational activity: rules are „habitual rules“ embedded in everyday actions of organizational actors. This is what we - in recourse to Giddens and Bourdieu - called the *interdependence of epistemology and ontology of a field* (see chapter 2.1.1). This interdependence is given for any propositional knowledge. Successful organizations integrate the epistemological dimension of abstract rules with their ontological dimension of habitual behavior. In other words, propositional knowledge is never only to be exclusively representational. It has to be applied in its aimed context to be of organizational relevance. And to be of relevance, organizational knowledge has to go beyond the level of external representation and embody itself as relation to meaningful action. Of course, such an application of „propositional knowledge“ to organizational practice is not a one-way road. The application may reveal weaknesses of propositional knowledge and trigger feedback which initiates the adaption and modification of roles, rules, or routines (just as scientific theories have to be adapted if incongruent to empirical verification)⁶². According to our

⁶¹ Bakunin was a theorist of anarchism in the 18th century (Masters, 1974).

⁶² Chapter 4 will show that knowledge application and knowledge creation are just two analytical views on one and the same phenomena.

framework in chapter 2, „knowledge-as-theory“ is related to all three levels of *representation, meaning, and action*, although its initial form lies (like „explicit knowledge“ in Nonaka & Takeuchis approach) at the representational level:

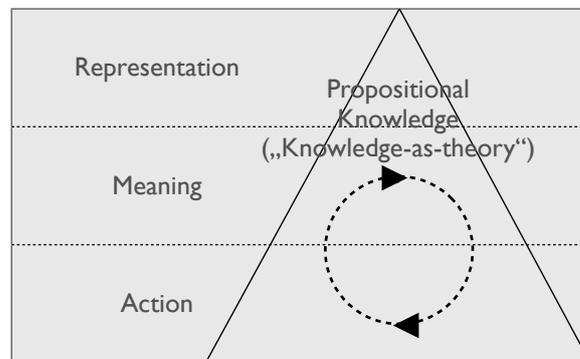


Figure 3.1: Propositional knowledge („knowledge-as-theory“) and the triadic structure of knowledge

Max Weber not only provided the first blueprint of a rationalized organizational theory; he also already spotted a gap between organizational knowledge and its application to particular contexts. Rules have to become „habitual rules“, i.e. they have to be related to action, and finally have to bridge the gap between knowledge and practice. As we will see in the next chapter, bridging that gap is not as easy as it may seem in the first place.

3.2 The gap between organizational knowledge and practice

This chapter will demonstrate that application of organizational knowledge is not as smoothly as it might appear to Weber and others. Knowledge application cannot be a mechanical deduction from formal rules to meaning, practice, and the „habitual activity“ of organizational actors. The holistic idea of a seamless integration between epistemological and ontological dimensions of the organizational field collapses when we take a closer look at how propositional knowledge is actually contextualized to organizational practice.

The reason for generalizing concepts was to pattern and standardize organizational behavior. A call center agent, for instance, should first be able to unambiguously categorize the context of a call. Then he should carry out the respective predefined solution according to available rules and routines, i.e. ac-

ording to given propositional knowledge of the organization. The assumption is that generic rules reduce the contextual complexity of that particular situation so it can be categorized and the actor can carry out his action in an appropriate way:

“From a strictly organizational point of view, the contextual specificity surrounding every particular call (a specificity that callers tend to expand upon in their calls) is removed through the application of generic organizational rules.” (Tsoukas & Vladimirou, 2001, p. 980)

This presupposes that the generic categories of those rules („X, Y, Z“ - e.g. „if a customer of type X has a problem of type Y it ought to be treated with a solution of type Z“) are applicable to the particular situations where they ought to be implemented. This is to say, the context has somehow to *fit* (i.e. it has to be reducible) to typified organizational rules. Hence, recurrent, rationalized, and standardized behavior requires not only generic *propositions (knowledge)* but also an appropriate and controllable *context (practice)* which is unequivocally subsumable by these propositions.

This is problematic as we already spotted at the example with the „IBM-rule“: contextualization of knowledge to practice is a mediated process with different influencing factors. Tsoukas and Vladimirou explore the characteristics of this contextualization. They conclude that propositions have to be (1) *personalized*, (2) *justified* and (3) *applied* (Tsoukas & Vladimirou, 2001, p. 980ff.). These three modes can be seen as integrative processes enabling organizational knowledge (as „theory“) to be effective and to permeate the social practice of the organization. These three integration processes should allow knowledge to become an organizational „concept“ with a syntactic, semantic, and pragmatic dimension, and finally to be realized and implemented in the organizational practice.

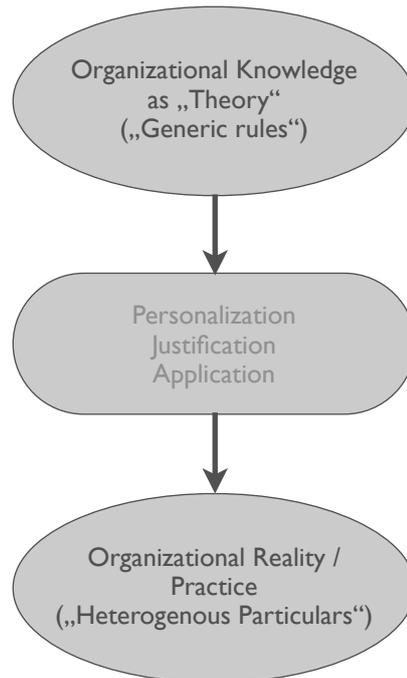


Figure 3.2: Application of organizational knowledge to organizational practice - based on (Tsoukas & Vladimirou, 2001)

Let us take a look at these three processes which connect organizational knowledge with its practice.

3.2.1 Personalization

First, knowledge is contextualized towards „*personalization*“. The argument is that knowledge needs to be linked to the context of individual human action and judgement. According to Karl Polanyi, already abstract scientific knowledge is related to personal experience:

“Even the most exact sciences must therefore rely on our personal confidence that we possess some degree of personal skill and personal judgement for establishing a valid correspondence with – or a real deviation from – the facts of experience.” (M. Polanyi, 1975, p. 31)⁶³

Just as the scientist uses human judgement to link theory to observations, the organizational actor has to link organizational rules to particular situations, individual judgements, and action-contexts: all knowledge is „personal knowledge“ (M. Polanyi, 1958). Therefore, abstract rules are to be incorporated to their users, i.e. explicit knowledge (e.g. a set of formalized instructions) ought

⁶³ cited in (Tsoukas & Vladimirou, 2001, p. 982)

to become „tacit“ (M. Polanyi, 1967). The epistemological concepts which guide the behavior of an actor may have been adopted through cognitive reflection, for instance, through reading a manual. But as this piece of knowledge enters the daily routines of social practice it more and more fades from direct attention and gets incorporated to the habitual practice and the skill-set of the actor. It then guides behavior „subsidiarily“. An experienced telephone operator does neither physically, and usually not even consciously, refer to written instructions every time a specific problem occurs. He has rather „instrumentalized“ the needed knowledge and applied it „tacitly“ to the particular situation in the organizational context:

“Operators develop a set of diagnostic skills which over time become instrumentalized, that is to say, tacit. This enables them to think quickly, ‘on their feet’, and serve customers speedily. Over time, operators learn to dwell in these skills, feel them as extensions of their own body and thus gradually become subsidiarily aware of them, which enables operators to focus on the task at hand.” (Tsoukas & Vladimirou, 2001, p. 987).

3.2.2 Justification

Second, organizational knowledge needs to be „*justified*“. It is always dependent on and related to a „background“ (Patriotta, 2003) which co-determines its meaning. A proposition - e.g. „if an important customer calls, a call-center agent has to answer the calls by no later than 1 minute“ - is justified by (and relies on) aims, values, and presumptions of the organization. In this case an underlying aim could be to satisfy especially important help-desk customers, backed by the assumption that satisfaction means quick help. Rules and generalizations are contingent to purposes or aims which are neither explained by nor part of the rule. If actors enact rules without knowing anything about their justification, the application gets much more inflexible. In other words, actors should not only „know-what“ the rule is about but also „know-why“ it is in place.

3.2.3 Application

Third, knowledge needs to be „*applied*“. This is the main contextualization issue which more or less subsumes the two previous features of „personalization“ and „justification“. Talking about „application“, Tsoukas and Vladimirou mean

the application of *knowledge* to a *context*. Now the authors claim that knowledge application is a complex issue because of both (a) the nature of context and (b) the nature of knowledge.

(a) The nature of context

The organizational context seems to be too complex to be controlled by a set of rational propositions alone. It seems to be unfeasible to fully rationalize and pattern dynamic organizational surroundings (like markets, political, and social change) under generalized concepts. The same is true for internal complexity: even the best rules, routines, and role descriptions cannot guarantee to unequivocally guide human conduct inside an organization. Organizations are open systems facing „internal change“ and „external contingencies“ (Tsoukas, 2005a, p. 76) which both are resistant against being reduced to and categorized by propositional knowledge. If someone would seriously try to resolve the social world into a rational set of general rules, one would have to make the ontological assumption that the social world „fits“ to those rules (Tsoukas, 2005a, p. 80f.). At least since Kant (see chapter 1.3) we know that such an assumption is problematic and that concepts which are constructed to explain (or order) the world are not to be confused with attributes of the world itself. So we may say that propositions are rationally patterned, but that does - strictly speaking - not entail that also the social world is patterned.

Another peculiarity of the context of knowledge application is the factor of time. As the future is „not a linear extension of the past“, propositional knowledge cannot sufficiently „provide actors with the knowledge of how to apply definitively a set of rules in the future, or how to create new rules“ (Tsoukas, 2005a, p. 76). In other words, a general rule for a specific scope (e.g. that of a telephone call center) cannot guarantee eternal validity. We simply do not know if it can be successfully applied to all possible future circumstances. In contrary, experience shows that in many cases rules had to be adapted and/or

replaced in order to deal with new situations⁶⁴. Hence, also in a temporal sense the application context seems to be unpredictable, random, and patterned non-linearly: organizations are „noisy“ (Tsoukas, 2005b). Their internal and external complexity retain a *gap* between organizational knowledge (propositions) and organizational practice (context).

(b) The nature of (propositional) knowledge

We have seen that the knowledge application context is unstable. But what is with the propositional knowledge itself? We said that - from a rationalistic standpoint - organizational knowledge has to provide stable and recurrent organizational action. But to do so the categories and representations on which action is based would require stability of their meaning. Only then a rule would be interpreted in the same way by different actors. But that is mostly not, if ever, the case. Many rules are, as we intuitively know from our experience, open to different interpretations. Propositional knowledge is equivocally interpretable because of its plurality and open-endedness. Tsoukas claims that

„(t)he semantics of knowledge representation in an organized context is intrinsically unstable (although this does not mean permanently unstable) and, therefore, so are the rules underlying its functioning“ (Tsoukas, 2005b, p. 77)

But why is a rule ultimately „imperfect“ and why is its instability ultimately unavoidable? Tsoukas draws from Wittgenstein who came up with the simple proposal that a rule in itself does not determine *how* the rule has to be applied (Wittgenstein, 1953/2006). The application of rules always leaves „loopholes open“ because the meaning of a rule is not unequivocally encapsulated in its propositional content (Wittgenstein, 1969). Wittgenstein compares a rule to a „sign-post“:

„A rule stands there like a sign-post. -- Does the sign-post leave no doubt open about the way I have to go? Does it show which direction I am to take when I have passed it; whether along the road or the footpath or cross-country? But where is it said which way

⁶⁴ This also affects the creation of new knowledge. To explain the creation of knowledge as a rational determination from past states would undermine its novelty. The creation of new organizational knowledge can generally not be understood in terms of the past alone but only from the „emerging future“ (Scharmer, 2009).

I am to follow it; whether in the direction of its finger or (e.g.) in the opposite one?“ (Wittgenstein, 1953/2006, §85)

The content of the rule is not enough to determine its application because application very much depends on the actors assessment of the concrete situation as well as on his/her practical experience. To determine whether or not and how a rule has to be applied, actors have to draw from „historically evolved collective understandings and experiences“ (Tsoukas & Vladimirou, 2001, p. 983). This is because „rule-following“ and „norm-guided behavior“ is based on generalized concepts which are inherently contingent and open-ended towards a plurality of possible and unpredictable instances:

„(Norms) cannot themselves fix and determine what actions are in true conformity with them. (...) There is no logical compulsion to follow them in a particular way. Every instance of a norm may be analogous to every other, but analogy is not identity: analogy exists between things that are similar yet different. And this means that, although it is always possible to assimilate the next instance to a norm by analogy with existing examples of the norm, it is equally always possible to resist such assimilation, to hold the analogy insufficiently strong, to stress the differences between the instance and existing examples. If norms apply by analogy then it is up to us to decide where they apply, where the analogy is sufficiently strong and where not.“ (Barnes, 1995, p. 55)⁶⁵

The key here is the conclusion that rules do not unequivocally determine how they are used. Or in our knowledge-based view: knowledge does not unequivocally determine its application. Hence, *the application of knowledge is underdetermined by its content*. Between knowledge and its application there is an open range, a *gap*, which has to be filled by interpreting actors. Organizing is no mechanistic process where propositions are enacted by cog-like actors. Rules, understood as propositional knowledge, have to be connected to the heterogeneous field of organizational practice by sensemaking actors. This gap between knowledge and practice, a gap between „generic categories“⁶⁶ and „heterogeneous particulars“ (Tsoukas & Vladimirou, 2001, p. 979f.), poses a challenge for any organization. It is a gap which has to be bridged repeatedly in every single

⁶⁵ cited in (Tsoukas & Vladimirou, 2001, p. 980f.)

⁶⁶ Tsoukas uses the notions „concepts“ and „categories“ interchangeably. In the case of rules we will understand rules as (organizational) „concepts“, and the generic elements of rules „categories“. Of course, both are tightly related. Open-endedness and potential plurality is an attribute of both categories and concepts.

situation. Only if actors are able to give meaning to propositional knowledge and to integrate it to their practice, application is possible. It is crucial to see that the gap between knowledge and practice cannot be permanently closed or avoided. No matter how elaborated a proposition is being formulated, there always remains a distance between itself and its possible application instances. Of course, this does not mean that application of organizational knowledge is not possible. It rather means that application is not unequivocally determinable.

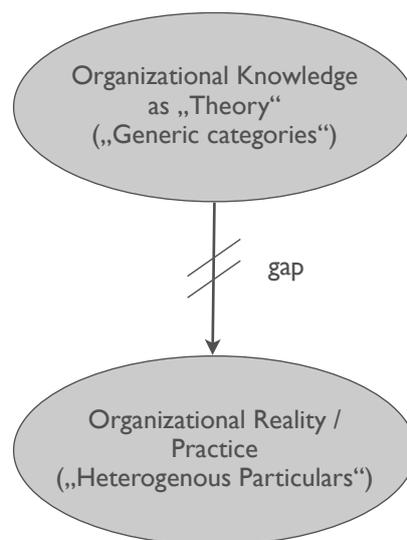


Figure 3.3: Gap between theory and practice

Due to this gap, Tsoukas and Vladimirou include „collective understanding“ and „particular contexts“ into their description of the relation between organizational knowledge and action:

„Human action in organizations (...) necessarily draws on organizational knowledge, namely on sets of generalizations underlain by collective understandings, activated in particular contexts.“ (Tsoukas & Vladimirou, 2001, p. 984)

Note again that this does not mean that there is no connection between the two levels (if this would be the case, no organizing would be possible at all). It just means that there is no 1:1 translation from organizational knowledge to its application in practice. It means that propositional knowledge in regard to its meaning and relation to action, as well in its concrete integration to practice, is open-ended and contingent. How propositional knowledge actually is applied

can only be observed afterwards. Knowledge-application cannot be predicted: it is a *post-factum* occurrence.

3.3 Socialized Concepts: Organizational knowledge as „narrative“

3.3.1 Knowledge as contextualized narrative

From chapter 1 we know that not only „rationalized“ but also „socialized“ concepts shape the organization. How could a knowledge-based reformulation of „socialized concepts“ look like? Here again Tsoukas offers useful suggestions. Based on theoretical arguments and empirical observations he suggests to supplement „propositional“ by „narrative“ knowledge (Tsoukas, 2005a)⁶⁷. Narratives provide a form which allows to condense, retain, and distribute contextualized, practical knowledge throughout the organization, e.g. as stories, anecdotes, or best-practices. From a socialized perspective an organization is not only an „institution“ but also a „practice“ (chapter 1.2.2). Hereby, a practice is understood as a social field with shared meanings, a common history, and collective aims (MacIntyre, 1981). Narrative knowledge then is the epistemological dimension of that shared practice. Empirical research showed that actors not only apply propositional knowledge like instructions from repair manuals but also shared stories of former successful (or unsuccessful) events. Julian Orr observed repair technicians in their problem-solving activities (Orr, 1996)⁶⁸. Orr discovered that these actors draw from stories and best-practices circulating as shared experience in the community of repair technicians⁶⁹. Unlike propositional knowledge, narrative knowledge is not arranged as a general, rule-like „if-then“ logic. And unlike propositional knowledge it is not built out of generalized categories which decontextualize knowledge in order to make it reusable. Narrative knowledge is (in its content) not instructive and not generalized at all.

⁶⁷ Other organizational studies authors do also put emphasis on the narrative dimension of organizational knowledge (Boland & Tenkasi, 1993; Czarniawska, 1997; Geiger, 2006; Orr, 1996; Schreyögg & Geiger, 2005)

⁶⁸ Which was already mentioned in chapter 1.2.2

⁶⁹ This community may be restricted only to the organization, but also may exceed its boundaries. „Communities-Of-Practice“ are mostly centered around topics and not constrained to single organizations (Brown & Duguid, 1991; Wasko, 2005; Wenger, McDermott, & Snyder, 2002).

Instead, it is linked to singular former events and circumstances which are preserved in a „collective memory“ of a practice and encoded into a narrative form:

„(S)ories of the good old days, about achievements and failures, about awkward people and memorable episodes; stories about everything that matters to those participating in the practice“ (Tsoukas, 2005a, p. 82)

Narratives are centered around relevant events of the organizational practice, manifested in stories, anecdotes, best-, or worst-practices. Although not constructed as rules, narratives are very powerful in guiding organizational action. As Orr's field studies showed, actors draw on narrative knowledge as template for their actual situation. They solve problems not by following exact rules („if-then“ logic) but by re-contextualizing narratives about former occurrences to their actual situations („as-if“ logic)⁷⁰.

3.3.2 Narratives in action: socialized organizational knowledge applied

This type of knowledge refers to contextualized singular events, which mostly lie in the past. However, actors are able to apply such knowledge to a variety of other situations. They do so by comparing and adapting the singular circumstances of narratives to new situations. This adaption creates *meaning* and possibly guides organizational *action*. But narratives are also *represented*, namely in a vocal form: stories are *told* and are passed over verbally. Moreover, they can also be encoded into non-verbal, external media. There are, for instance, different cases in which narrative knowledge is put into a digital form allowing efficient access for a wider range of organizational actors⁷¹. This can easily be observed at organizations which carry out their activities within project life cycles, e.g. consulting firms. Here, experiences and events of a particular project may help in other projects. Globally accessible databases help consultants to

⁷⁰ As already mentioned, the comparison between „if-then“ and „as-if“ is motivated by (Tsoukas & Hatch, 2005) referring to Jerome S. Bruner's two „modes of thought“ (Bruner, 1986, 1996). The comparison is also made by Gerardo Patriotta, but in a different context (Patriotta, 2003, p. 189).

⁷¹ see e.g. the well-known „Rapid-Response network“ use-case from McKinsey Company (Probst, et al., 2002, p. 74); for implications on knowledge management systems in general, see (Schreyögg & Geiger, 2005, chapter 6)

search and find useful best-practices which they may draw from in their current and future projects (Probst, et al., 2002, p. 74).

Hence, also narrative knowledge is active on all three dimensions of organizational knowledge. Anchored in the contextualized domain of *action*, it carries *meaning* which can be recontextualized in new situations as well as it is *represented* in spoken or written form:

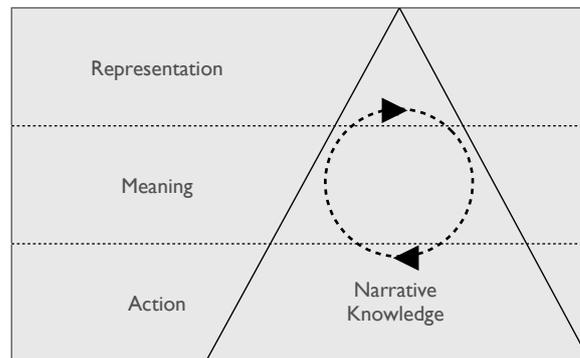


Figure 3.4: Narrative knowledge and the triadic structure of knowledge

Knowledge-as-narrative, just like „knowledge-as-theory“, may appear on all three distinction-making levels. Take a consultant who faces a new circumstance which requires action, for instance, to set up a team for a new project. She searches and finds a best-practice in the organization’s internal database. She is able to make sense of that best-practice in light of her new situation. The narrative encoded as best-practice gives valuable input for her specific team building activity. What happens here is distinction-making based on narrative knowledge as well as subsequent application to organizational practice. But unlike with propositions, knowledge is not represented as rule but - in this case - as a best-practice report, i.e. as a written narrative. And concerning the interpretation of its action-relevant meaning and its application to practice the actor does not *assimilate* the particular situation to generalized knowledge („if-then“ logic). Instead, she adapts and builds an *analogy* between her particular situation and the singular event of the narrative („as-if“ logic). And if afterwards her own case shows to be suitable for being a best-practice itself, then it may be passed on informally within the organization (in the representational form of spoken language); or it may even be converted to a more formalized state (in

the representational form of written language which is electronically accessible). The stock of organizational knowledge would then have been increased and other actors could draw on it for their own distinction-making and problem-solving activities.

This also explains why the flow of knowledge within the three dimensions goes in both directions (symbolized as an arrow-circle in figure 3.4). Narratives emerge out of *action* (particular events) and get *represented* in stories which are distributed throughout the organization: knowledge flows from action *up* to representation, i.e. knowledge is *created*. From that form of *representation* narratives then may enable the construction of *meaning* and *action* in new situations: knowledge again flows from representation *down* to action, i.e. knowledge is *applied*. Hence, the circular movement within our three-layer model covers both application and creation of organizational knowledge.

Although narratives show some basic differences to propositions, they also have to be applied by actors to the organizational practice. And also here a gap becomes visible between knowledge and the heterogeneous field of practice. The specific characteristics of narrative knowledge is not that it does something totally different than propositional knowledge. It is more the *way how it does the same thing*, i.e. how it enables actors to make distinctions and to carry out action. Also narratives „can be seen as a form of problem-solving in our everyday coping with the world.“ (Patriotta, 2003, p. 69). But instead of relating actual circumstances to abstract propositions, actors link their circumstances (e.g. the team-building assignment) to particular events transported by narratives (e.g. a best-practice of a similar team-building process). And although application is possible without explicitly generalized concepts like in rules, narratives do offer a „*flexible generality* that makes them both adaptable and particular“ (Brown & Duguid, 1991, p. 44, my emphasis)⁷². From that viewpoint also narrative knowledge carries generalization because it is open to be adapted and applied to a range of particular instances. Also a narrative claims to transport knowledge

⁷² cited by (Tsoukas, 2005a, p. 83)

that can be generalized and helpful in future situations. Otherwise it would „not be worth telling“ (Schreyögg & Geiger, 2005, p. 307).

3.4 Conclusion

In this chapter we followed Haridimos Tsoukas in formulating a knowledge-based view on organizations. We reformulated „rationalized“ and „socialized“ organizational concepts from chapter 1 as „propositional“ and „narrative“ organizational knowledge respectively.

Encoded into rules, routines, roles, or other explicit content, propositional knowledge operates with generalized categories which have to be applied to the concrete organizational practice. Like with scientific theories also organizational knowledge (as propositions) subsumes heterogenous particulars under generalized concepts. These concepts are located in a fundamental tension („gap“) to its particular context of application. This was indicated by the Wittgensteinian insight that in general the content of a rule does not determine its use. The use is up to the interpretation and contextualization of organizational actors. It is up to „us“ to decide how to enact a rule, to bridge the gap between knowledge and practice. This openness of interpretation is given because propositional knowledge is based on generalized concepts. As such its content consists of categories (e.g. „a problem of type X“, or „action of type Y“) and relations (e.g. „a problem of type X ought to be solved with action of type Y“). Both categories and relations are generalized claims towards, potential infinite, application cases. Moreover, generalized categories are unstable because in organizational practice new problematic particular situations may occur which are not subsumable under, for instance, „problem of type X“. Generalized relations, on the other hand, are unstable because to solve problem X with action Y may have worked until now but one can never be sure if this is valid for all possible future cases, too. This is similar to the generalized knowledge claim that „all swans are white“⁷³. Such knowledge is not derived from the fact that all current and future swans have been inspected (which is impossible). It is a general claim directed towards an open-ended empirical context; instead of

⁷³ This famous example has been introduced by Karl Popper (Popper, 1959).

being „true“, it can only be „not yet falsified“. So even if its categories („swans“ and „white“) would be unequivocal and stable, their relation (that „all swans *are* white“) is contingent to open-ended empirical observations. To conclude, all generalizations are potential falsifiable claims and latent ambiguous categories towards an open world. Hence, also propositional organizational knowledge is not unequivocally related to its application context. Organizational knowledge does not determine how it is interpreted and practically applied because of the intrinsically open-ended and ambiguous nature of knowledge in general⁷⁴. This is why we may state that *the application of organizational knowledge is underdetermined by its representational content*. A general epistemological gap separates knowledge and its application.

We encounter that gap also within other forms of organizational knowledge like that of narratives. As we have seen, to supplement „propositional“ with „narrative“ knowledge does not close the gap but embraces it. A story of a past event is evidently not describing my new situation, although I may use it as template for my actions in that new situation. Narratives clearly differ from formal rules. Nonetheless, they ultimately do not strip of generalization, they much more rely on „flexible generality“ (Tsoukas, 2005a, p. 83); they also do not abandon ambiguousness or open-endedness as they draw their power from their „contingent connections to individual actions“ (Tsoukas, 2005a, p. 83). Narrative knowledge is still *knowledge*, just as its supplementing counterpart: „(p)ropositional knowledge and narrative knowledge are the two ends of the spectrum of organizational knowledge“ (Tsoukas, 2005a, p. 88). And as such, also narrative knowledge is located in a tension to the context in which it is applied. At some points in Tsoukas work, narratives may appear as the missing link between knowledge and practice⁷⁵. But that link is „inconclusive“, „contingent“ and „ambiguous“ (Tsoukas, 2005a, p. 83), just like with propositional knowledge. The epistemic gap is prevalent, no matter in which form organizational knowledge appears. Propositional and narrative knowledge both share the

⁷⁴ This claim will be backed by our general epistemological reflections in part II.

⁷⁵ „their (narratives, K.S.) contingent connections to individual actions help bridge the gap between generic rules and local circumstances in a flexible and inconclusive manner.“ (Tsoukas, 2005a, p. 83).

fate to underdetermine their application, i.e. the way in which knowledge is applied to the heterogenous particulars of organizational practice, is contingent.

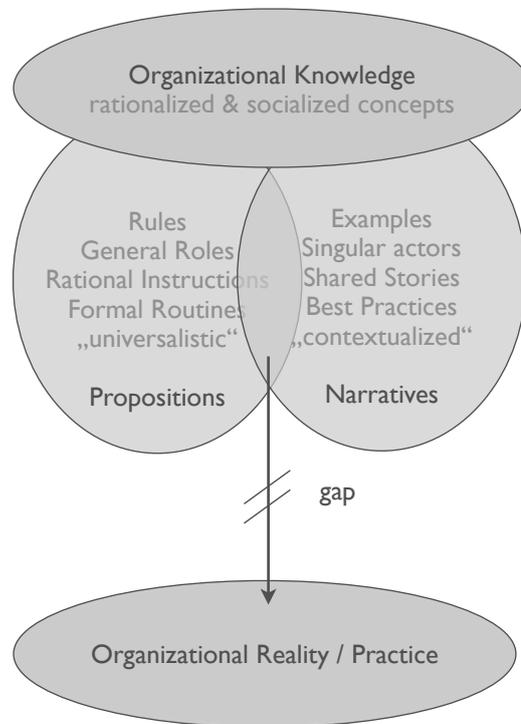


Figure. 3.5: Tsoukas knowledge-classification and the epistemic gap in organizations

Chapter 4: The creation of organizational knowledge

4.1 The complete view: no application without creation

So far, we have identified organizational knowledge as being either propositional (chapter 3.1) or narrative (chapter 3.3) and explored the application of these concepts to the concrete and heterogeneous organizational practice. Hereby, we presupposed that rules, routines, handbooks, IT systems, stories, best practices, and so forth, are already in place and available within the organization. But there is of course *no application* without *creation* of what is being applied. Thus, we have so far discussed only one way of the gap between knowledge and practice. Of course, creation to a certain extent is involved in application, because to apply knowledge in a situation always includes to create new distinctions, and to eventually adapt applied knowledge. But to complete our reflections on the characteristics of organizational knowledge, we will now turn our focus explicitly to the other direction of the knowledge flow, i.e. from *application* to *creation* of organizational knowledge.

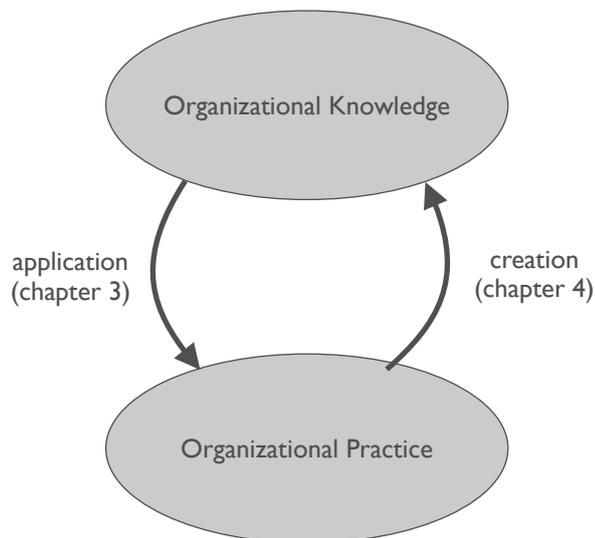


Figure 4.1: Application and creation of organizational knowledge

4.2 The creation of „theories of action“

4.2.1 Theories of action as organizational knowledge

Argyris' and Schön's contributions to the topic of „organizational learning“ (Argyris & Schön, 1978) provide a valuable source for our discussion because organizational learning ultimately is about permanent organizational knowledge creation. According to Argyris & Schön, organizations rely on a stock of knowledge which guide its behavior and activities. These „theories of action“ underly all individual and collective human behavior in organized settings. Similar to Tsoukas understanding of organizational knowledge as propositional „theory“, these „theories of action“ provide a structuring and rationalizing function. They strive for bringing order to the potential open-endedness and complexity of meaning and action. The organizational theorist Gerardo Patriotta explains:

„(theories of action are) conceived as cognitive structures underlying all deliberate human behavior. A theory of action is a set of norms, strategies and assumptions informing human conduct. It contains hypotheses about the world aimed at realizing a correspondence among situations, intentions and behavioral outcomes. Typically, a theory of action consists of a set of interconnected propositions having an 'if ... then' form. Theories of action are inferential structures characterized by an instrumental quality: in situation S, if you want to achieve consequence C, under assumptions a,..., n, do A...“ (Patriotta, 2003, p. 19)⁷⁶

These inferential structures govern how the organization and its members ought to react to specific situations in their day-to-day activities (embodied e.g. in routines or instructions) as well as in more general decision making activities (embodied e.g. in strategies or values). Now, this is nothing different from what Tsoukas classifies as „propositional knowledge“ and what we have already discussed in chapter 3⁷⁷. What interests us here is how organizational knowledge as theories of action come into existence and how they are reconstructed over time. Argyris & Schön propose that knowledge is repeatedly created when existing theories of action are not sufficient, i.e. when established routines and

⁷⁶ see also (Argyris & Schön, 1978, p. 11)

⁷⁷ In fact, Tsoukas refers to Argyris & Schön as well as to sociology of knowledge (especially to Berger & Luckmann) as sources for his conceptualization of propositional knowledge (Chia & Tsoukas, 2002, p. 580; Tsoukas & Vladimirou, 2001, p. 979).

strategies encounter problems which cannot be solved with the currently available stock of knowledge. In such cases organizations either fail to react to the new situation properly, or they „learn“. If the latter occurs an organization creates new knowledge and adapts its theories of action to the new situation. Such learning process is depicted as a „single loop“ (Argyris, 1976, 1977) between action and its results, between the underlying theory of action and reality, between knowledge and practice (figure 4.2).

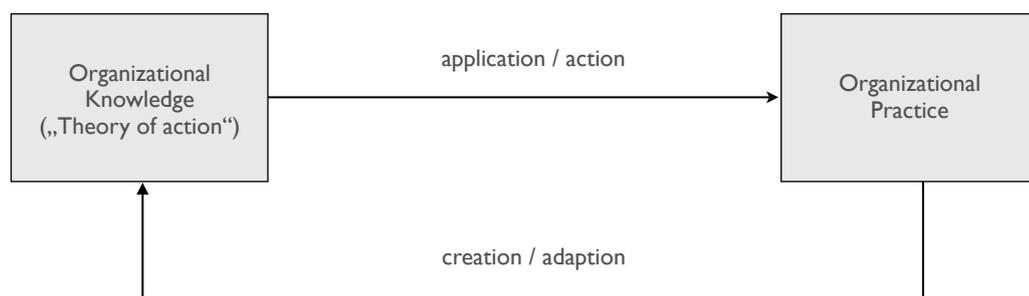


Figure. 4.2: Single loop learning

Similar to scientific knowledge creation, it is the experience of new phenomena and problems which let knowledge creation emerge. Organizations learn as they adapt their „theories of action“ to their changing (internal and external) environment. Also similar to their use in science, theories are vehicles for their users to solve predefined problems and/or allow predictability. As indicated previously, there is no fundamental difference between theories created in science and theories created in organizations. Both offer distinctions to grasp the complexity of the given world. It may seem that science needs theories only to *explain* the world, whereby organizations need them only to *act* in it. But ultimately all knowledge is bound to some sort of use and practice. This will be highlighted in part II of our inquiry where we will provide a social epistemological framework which binds knowledge to aims, standards, and uses in communities, no matter if scientific or non-scientific (chapter 8). For now it is important to see that organizational knowledge is central to enable a social group constituting itself as an organization. This is because concepts are based

on knowledge which offers distinctions for the organization and its actors in order to understand the world and to carry out action.

Of course also Argyris & Schön recognize different types of knowledge. Explicated and official theories of an organization („theory espoused“) are distinguished from concrete, often non-explicated, knowledge manifested in every days practice („theory in use“). „Espoused“ theories are reflected in official documents, workflow descriptions, or instructions. „Theories in use“, on the other hand, are routines and strategies which have sedimented over time into tacit behavior, background assumptions, and embodied skills. Despite their differences, both types of theories (just like both types of propositional and narrative knowledge from chapter 3) are to be understood as organizational knowledge which has to be related to organizational practice (see chapter 3.3.2).

4.2.2 Double loop learning

Argyris & Schön introduce another useful analogy to science. The authors note that action is not determined by isolated rules or instructions, but that theories of action are always bound to premises, background assumptions, and „governing variables“. Just as scientific theories are embedded in „paradigms“, also theories of action are framed by a second order discourse which constrains their range, application, and possibilities. And just as in science, creation of new knowledge may be needed on that second order to cope with more fundamental problems which cannot be solved within the existing paradigm. Learning, in this case, results in the adaptation and reconstruction of governing values, premises, and assumptions. Learning and knowledge creation then occurs within an additional second loop (figure 4.3).

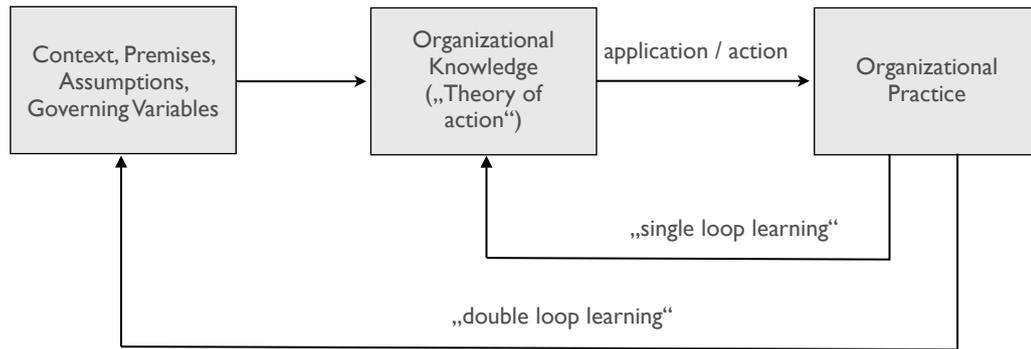


Figure 4.3: Single- and Double-Loop learning⁷⁸

In single loop learning, knowledge creation occurs in incremental steps by the adaption of existing action strategies piece by piece. In double loop learning, on the other hand, the underlying assumptions and the whole frame of the single loop is shifted.

Philosopher of science Thomas Kuhn made a similar distinction as he described knowledge creation *within* a paradigm as „puzzle solving“, and the creation of a new paradigm as „revolution“ (Kuhn, 1970). „Puzzle solving“ occurs, if a phenomenon in the world cannot be explained by existing (scientific) theories sufficiently. By adapting variables in these existing theories phenomena become explainable. But if this adaption fails and observed mismatches remain, puzzle solving is not adequate anymore. Increasing in amount and range, disruptive observations may reach an extent where a „paradigm shift“ is necessary. Such a shift reorders the basic assumptions of previous theories and problem solving strategies and introduces a new „framework of reference“ (Peschl, 2006, p. 120). Through the creation of such a new framework of reference, concepts of the field obtain fundamental new meanings and uses. Scientific paradigm shifts are observed as „scientific revolutions“ like the change from Newton’s physics to theory of relativity, the introduction of quantum mechanics, or the discovery of the DNA double helix. Revolutionary shifts also occur to technological paradigms. For instance, when Henry Ford did not improve transportation by adding more horses or optimizing carriages, but by developing a totally new mechanical principle of transportation. An organization, of course,

⁷⁸ based on (Argyris, 1977; Argyris & Schön, 1978)

also can (and sometimes has to) change its core values to cope with change and new challenges (we will give examples for this in chapter 4.4).

Single- and double loop learning do not only offer useful views to distinguish different levels of knowledge creation. They also indicate that construction of knowledge is contingent to underlying assumptions and premises. That there is no universal valid organizational knowledge, but only *contextualized* theories of action. This insight is important for us because we do not understand knowledge construction as a one-way project from a given problem to an optimal solution. The idea of double-loop learning urges us to understand change and learning as open for many directions. To understand knowledge creation as a pluralistic endeavor which has to be fueled by a range of multiple views and solutions. This is because the second loop allows to break out of existing routines and paradigms and to explore new viewpoints outside existing frames of reference. Hence, Argyris & Schöns model is not a „computer-model“ (Patriotta, 2003, p. 23). On the contrary, their contextualization of organizational learning to a contingent frame of reference helps us to see that knowledge construction is *not* a rationally determined feedback-algorithm but an open project that always may result in unpredicted outcomes. Knowledge creation is no mechanistic process but a controversial social interaction with an open end.

But if knowledge creation is open-ended and characterized by fundamental contingency, how does it reach a stable state so it can be applied by actors? How is the fragility of open-endedness compatible to the needed stability of recurring use within organizations? How does the contingent process of knowledge creation terminate in relatively stable manifestations which are „ready“ to be applied to organizational practice?

4.3 Hallmarks of knowledge creation: contingency, controversies and „black-boxing“

Again, if we claim that knowledge construction is a contingent and open-ended process we owe an explanation of how that contingency results in a passably stable set of applicable concepts. To do so, we will refer to „Actor-Network-

Theory“ (ANT) which offers both theoretical and methodological concepts to grasp the transformation („translation“) from knowledge as an open process to knowledge as a stabilized and ready-to-use resource. Gerardo Patriotta’s work on connecting ANT with organizations will guide our inquiry and will help us to understand organizational knowledge both as an open process *and* as a stable outcome; as „becoming“ *and* „being“ (Patriotta, 2003, p. 202)⁷⁹.

4.3.1 ANT, science & technology

ANT is an approach developed by philosophers and social scientists like Bruno Latour, Michael Callon, John Law, and others (Belliger & Krieger, 2006). It is tightly related and overlaps with „Science-Technology-Studies“ (STS) and „Laboratory Studies“; attempts which have in common that they explore the social processes of (scientific) knowledge- and technology-construction⁸⁰. ANT tries to deconstruct knowledge as an entity. It tries to focus on knowledge as a „heterogeneous network“ based on a diversity of elements being configured and put together in certain ways. John Law analyzes the origin of scientific knowledge as follows:

„Knowledge (...) is embodied in a variety of material forms. But where does it come from? The actor-network answer is that it is the end product of a lot of hard work in which heterogeneous bits and pieces--test tubes, reagents, organisms, skilled hands, scanning electron microscopes, radiation monitors, other scientists, articles, computer terminals, and all the rest--that would like to make off on their own are juxtaposed into a patterned network which overcomes their resistance. In short, it is a material matter but also a matter of organizing and ordering those materials.“ (Law, 1992, p. 381)

⁷⁹ Other noteworthy connections between ANT and organizational studies are provided by authors like John Law or Czarniaswska & Hernes (Czarniawska & Hernes, 2005; Law, 1994). For a recent attempt see (Vötsch, 2010, chapter 2.2.3). We are mainly going to be inspired by Gerardos Patriottas approach documented in his book „Organizational knowledge in the making: How firms create, use and institutionalize knowledge“ (Patriotta, 2003).

⁸⁰ These attempts can be subsumed as „techno-science-approach“ (Patriotta, 2003, p. 42). They share the same underpinnings, i.e. a basic constructivist view on scientific and technological „facts“, and a post-structuralistic way of identifying these „facts“ as socially constructed. Among others, ANT is about the „mechanics of power“ (Law, 1992, p. 380) which are involved in the construction of things and facts. This challenges traditional views on knowledge creation because social forces have traditionally only been counted as „biasing“ scientific knowledge-construction (Longino, 2002). Furthermore, the techno-science-approach is characterized by emphasizing empirical observation and being oriented on sociological methodology rather than exclusively on theoretical reflection (Law, 1992, p. 387; Patriotta, 2003, p. 45).

This view can be expanded to the social in general. From the viewpoint of ANT a social field is never a pre-given substance but an „effect“ which is generated out of heterogenous elements:

„This lies at the heart of actor-network theory, and is a way of suggesting that society, organizations, agents, and machines are all effects generated in patterned networks of diverse (not simply human) materials.“ (Law, 1992, p. 380)

Just as knowledge, the social is always a result of a generative process. And just as knowledge, „the social is nothing other than patterned networks of heterogeneous materials.“ (Law, 1992, p. 381). One other hallmark of ANT is that the elements of social networks are not only constituted by humans, but

„also of machines, animals, texts, money, architectures-- any material that you care to mention. So the argument is that the stuff of the social isn't simply human. It is all these other materials too. (...) If human beings form a social network, it is not because they interact with other human beings. It is because they interact with human beings and endless other materials too. (...) Machines, architectures, clothes, texts--all contribute to the patterning of the social. And--this is my point--if these materials were to disappear then so too would what we sometimes call the social order. Actor-network theory says, then, that order is an effect generated by heterogeneous means.“ (Law, 1992, p. 381f.)

ANT-oriented social scientists, in detailed field-work, explore how scientific facts are not simply „discovered“ but „created“. Investigating the concrete practice of scientists, e.g. in the laboratory (Knorr-Cetina, 1981), knowledge is seen not as a mere cognitive process inside the brain of an isolated scientist. Knowledge creation rather is embedded in a complex social network, and related to a variety of human and non-human actors like scientists, instruments, experimental settings, specific rules of the particular scientific community, and so forth. In fact, „laboratory“ in general is a good metaphor since it indicates that knowledge is not independent from its creation and application context, but interacts with heterogenous materials and actors. John Law says:

„Actor-network authors started out in the sociology of science and technology. With others in the sociology of science, they argued that knowledge is a social product rather than something generated through the operation of a privileged scientific method. And, in particular, they argued that ‚knowledge‘ (...) may be seen as a product or an effect of a network of heterogeneous materials.“ (Law, 1992, p. 381)

Knowledge in a distinct field is not „true“ if it corresponds to reality, but when it is manifested in stable settings, accepted in the scientific community, reused in other settings, published in recognized journals, and taught on relevant schools. In short: when it becomes an „obligatory passage point“ (Callon, 1986) for anyone who enters the respective field.

Similar conclusions can be drawn for the emergence of new technologies. New technologies or inventions are never predetermined by linear patterns. A new technological artifact has to go through a number of closure- and stabilization-processes in order to exist. Studies on the development of the bicycle (Pinch & Bijker, 1984) or the electric automobile (Callon, 1980) showed that for a new technology to emerge scientific outcomes have to be interpreted and related to application cases in specific ways, social actors have to be convinced, political, cultural and economical variables have to be set, and so forth. A vast number of heterogenous social actors have to be configured and calibrated („translated“) to make a technology an accepted one. For example, in the case of the electrical vehicle these relevant actors were catalysts, accumulators, electrons, users, scientific researchers, automobile manufacturers, suppliers, the public, and ministerial departments. All these actors⁸¹ were connected and „translated“ in specific ways which formed a temporarily coherent network stabilizing the shared meaning related to the electric car technology in France (Callon, 1980). Similar to the creation of scientific knowledge, ANT conceptualizes technological development „as a non-determined, multidirectional flux that involves constant negotiation and renegotiation among and between groups shaping the technology.“ (Patriotta, 2003, p. 46).

4.3.2 Being & Becoming: The dialectical nature of knowledge creation

Knowledge creation is a process qualified by underdetermination and equivocality, by controversies and negotiations. This originated already from our anti-

⁸¹ Some authors use the notion of „actants“ instead of „actors“ because the former is more open to the possible non-human component involved (Latour, 1997). Note that an „actor“ is also not restricted to individual persons, but may represent human collectives as well. Different actors (like individual persons) may form an actor-network (e.g. an organization) which then is „punctualized“ (Law, 1992, p. 384f.) and so becomes part of a larger network (e.g. an organization within the wider network of a global economy).

essentialist philosophical stance, i.e. that reality is not constituted by fixed entities („things“) but rather is an effect of construction and connection of heterogeneous circumstances (see chapter 1.3). This also marks the first aspect of the dialectical relation of knowledge-creation: due to their open-ended, plural, and „proximal“ (Cooper & Law, 1995a) nature, things (as well as knowledge about things) have no „naturally“ predetermined essence. Hence, knowledge is not simply „there“ but in its very nature an activity, a process, a *becoming*:

„Knowledge agents are caught up in a network of relations, in a flow of intermediaries, which circulate, connect, link and reconstitute identities. (...) As a consequence, knowledge is continuously subject to drifts and controversies. *It is never given in the order of things.*“ (Patriotta, 2003, p. 44, my emphasis)

But despite its contingent and process-like nature, knowledge creation leads to results: scientific theories are accepted and established, technologies are realized and used, organizational routines are put into place and applied. This points to the second aspect of the dialectical relation of knowledge-creation which is about durability and stability. It is about the obvious fact that knowledge is not only a *process* but also a *product*. Knowledge has an ontological dimension as well. In terms of our developed triangular understanding of organizational knowledge (chapter 2.2) we can state that knowledge-creation processes (a) are manifested in some kind of media, (b) allow construction of stable meaning, and (c) can be connected to recurring organizational action. All three dimensions require knowledge to be ontologically relevant, i.e. to be (to a certain extent) stable and durable. Hence, knowledge is not only „knowing“ but also „content“ (Longino, 2002, p. 77ff.), not only „proximal“ but also „distal“ (Cooper & Law, 1995b). It is not only in flux and in permanent *becoming*, but also a *being*. ANT recognizes this second ontological aspect of knowledge-creation and connects it to the first aspect of „becoming“:

„Given the provisional, contested and controversial character of knowledge making, a main challenge for the researcher is to understand how durability is achieved. How it is that things are performed (and perform themselves) into relations that are relatively stable and stay in place. (...) The solution provided by ANT is particularly original and insightful. Durability is the result of a temporary hooking up with circulating entities, the outcome of a technical black boxing of controversies. (...) In this respect, what we regard as ‘knowledge’, as a coherent unity, is an assemblage of heterogeneous materials and

multiple relations that have reached a stable yet provisional configuration.“ (Patriotta, 2003, p. 44f.)

Knowledge creation is a translation from *becoming* to *being*⁸². It emerges out of an open space of possibilities (as a „happening“ within „circumstances“) and turns to a temporarily stabilized distinctive concept which can be interpreted, used, applied, and instrumentalized:

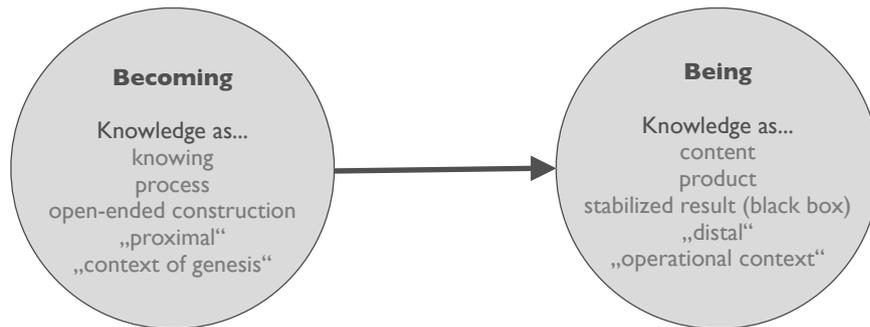


Figure 4.4: Knowledge translation - from becoming to being

Notice again the connection with our philosophical presumptions from chapter 1. What is described by ANT is the materialized and socialized mode of world construction. Kant’s idea of „synthesizing“ the „manifoldness“ of the given as the origin of knowledge was not only (implicitly) mirrored by Karl Weick’s notions of transforming „circumstances“ to „situations“, but is also at the bottom of the „translation“ process from becoming to being, as described by ANT⁸³.

The processual stages from becoming to being have also been pointed out by Klaus Krippendorff (Krippendorff, 1984, 1989, 2011; Krippendorff & Butter, 2007). According to Krippendorff, a design-process⁸⁴ should not primarily be driven by pre-determined „function“ but by contextualized „meaning“ (Krip-

⁸² In organizational theory this pair is defined by Patriotta (Patriotta, 2003, p. 202ff.), inspired by discussions in Actor-Network-Theory and Science-Technology-Studies (Knorr-Cetina, 1981; Law, 1992, p. 381ff.). „Becoming“ and „being“ have already been introduced to the thinking on organizations as „proximal“ and „distal“ by Cooper & Law (Cooper & Law, 1995a).

⁸³ As also identified within our philosophical reflections in part I, the origin of the becoming-being transition is the existential „condition humana“ which forces humans to „become what they are“ (chapter 1.3.2).

⁸⁴ „Design“ understood in a wide sense, i.e. not only as design of „products“ but also of „goods, services & identities“, or „multi-user systems“; and even up to more general artifacts like „projects“ or „discourses“ (Krippendorff, 2011, p. 411f.).

pendorf, 1989, p. 14ff.; 2011). Both *creating* and *using* something artificially designed starts with an initially open state (a „fuzzy image“) which triggers (first „arbitrary“, then „meaningful“) distinction-making (Krippendorff, 1989, p. 13). The latter gets „meaningful“ by constraining it to a specific context. Concerning the *creation* of something Krippendorff defines a „context of genesis“ where „ideas“ and „patterns“ of designers are turned to „temporarily frozen manifestations“ (Krippendorff, 1989, p. 28). That context contains heterogenous actors („stakeholders“) who need to be addressed and integrated. Thus, a design cycle not only involves „designing“ in the narrow sense but also other domains as manufacturing, distribution, or consumption. These „networks of stakeholders“ include actors like „engineers, investors, merchants, owners, users, bystanders, consumer advocates, ecologists“, and so forth (Krippendorff, 2011, p. 414). An artifact has to go through a creation process where patterns „must be designed to travel by efficient paths through a whole circular chain of stakeholders“ (Krippendorff, 1989, p. 28). This circle may be endless, because artifacts can continuously be adapted and improved. But nonetheless, artifacts have to be *use-able*. In our words, the process of *becoming* have to temporarily result in a *being*. According to Krippendorff, the latter happens within an „operational context“ which has to be reflected and anticipated by the designer. This is important because in order to become a (re-)useable being a designed artifact has to be meaningfully incorporated by users, i.e. it „should fit or be interpretable in terms of the cognitive models that lead to their safe and socially desired use“ (Krippendorff, 1989, p. 17). „Being“ then means not only being a „thing“ but offering its potential users „identities“, „qualities“, „locations and orientations“, and so forth (Krippendorff, 1989, p. 16ff.). We cannot discuss the implications of Krippendorff's reflections on design for organizational knowledge here in detail, but his approach clearly highlights the importance of the complex social context of creation of artifacts, as well as the transformative steps from creation to a (temporarily stable) state of being which makes application possible.

We will now return to actor-network theory (ANT) and discuss how Gerardo Patriotta describes the transformation from becoming to being, by adapting the

terms of „black-boxing“ and „epistemological closure“ to the field of organizational knowledge creation (Patriotta, 2003).

4.3.3 Black-boxing and epistemological closure in organizations

From our theoretical position that we have developed in the last chapters, knowledge creation is seen as being basically contingent and equivocal. Creation of scientific theories as well as the development of technological artifacts are embedded in complex social networks; hence, they are contingent on a diversity of factors. A detailed philosophical analysis of the concept of knowledge in part II will discuss why knowledge creation *in general* is equivocal and potentially open-ended. There we will also discuss one issue of philosophy of science, which is called the „underdetermination problem“ (Duhem, 1954; Longino, 1990, 2002). The latter states that scientific outcomes (theories) cannot be determined by observations, logic, and traditional scientific values alone, i.e. that the creation of theories cannot be understood as the mere „correct“ subsumption of data; rather it is embedded within a social context of background-assumptions which co-determine how data is connected and generalized. Creation of knowledge is not predetermined only by some unequivocal (scientific or technological) lines of development, logical patterns, or rational criteria. This is why it is beneficial to explore not only *rationalistic* but also *social* processes which actually lead to acceptance, stabilization and canonization of knowledge⁸⁵.

The „underdetermination problem“ of knowledge creation is even more pressing in organizations as here knowledge is to be created to solve problems of action⁸⁶. And as „action is equivocal, it generates problems of interpretation and sense making. Action is an open work whose meaning is in suspense.“ (Patriotta, 2003, p. 176). And like in science, also in organizations the

„main issue that needs to be addressed is the problem of epistemological closure; that is how controversial processes are turned into stable and durable outcomes. The translation

⁸⁵ To understand such a social production of knowledge is the aim of ANT-inspired „sociology of science“ and „science and technology studies“.

⁸⁶ Whereby, as we will see in part II, knowledge in the sciences ultimately is also related to action.

from controversies to agreed facts and the description of the processes through which meaning is institutionalized are critical to the construction of a theory of knowledge.“ (Patriotta, 2003, p. 176)

To understand epistemological closure under the condition of open-endedness and underdetermination, the notion of „black box“ may be helpful because it unites the two dialectical aspects of „becoming“ and „being“:

(1) *Black box as being*

We can see objects like a TV, but also an organizational routine, as black box. Applied by actors in their respective fields a black box is basically defined by input and output: all I need to know for watching TV is that it needs input (power, but also information about the desired channel or volume) and that there is output (picture and sounds). I need not to have any idea what in fact is happening inside the TV. This is why the box is opaque to its user, why it is „black“. The TV is simply there: for its user it is a „being“. And if everything works it provides the desired output to my input.

This is similar to organizational routines. If I am a team leader in a factory I am concerned with routines of my assembly line. And although I am dependent on outcomes of an upstream process, I do not need to know all internal details of the routines of that process. For me, the upstream process is a black box and my team has only to rely on its output which is processed as input for my own routines.

Furthermore, most routines are already in place and adopted by the performing actors. In chapter 3.2 we have seen that actors mostly do not consciously „know“ what they are doing. Routines become embodied as they get „implicit“ and „personalized“ and subsequently are „instrumentalized“. „Personalization“ (and ultimately „application“) of a routine then is nothing else than closing the black box and blurring its origins. Empirical observations as well as our daily experiences show that in fact we often do not know „how“ people do something. All we see is some input and some output: everything in between is hidden in the box.

(2) *Black box as becoming*

Black boxes conceal their inner structure. But this also implies that there *is* an inner structure. Only, it cannot be seen. This challenges organizational studies as well as reflexive practitioners. Because if we would be able to open it, we could see specific connections of various sub-components. We could see a specific order of materials that makes the black box instrumentally work as presented to the end user. Exploring the origin of that order reveals „that particular configuration of sub-components is the result of a controversial process of knowledge creation that at some point has been settled and concealed in the box.“ (Patriotta, 2003, p. 177). „Being“ was the point of departure for the end-user (and for a functionalist view on organizational knowledge). But for the creator of the box (and for a constructivist view on organizational knowledge) that „being“ is rather the *result* of a contingent creation process („becoming“) which has been hidden. To focus on „becoming“ shows that the inner structure of the TV or the routines of the upstream process are no naturally given things: they have a history and passed contingent steps of development.

The peculiar thing about a black box is that its inner constitution becomes effective in the very moment it is concealed. As its traces get blurred the black box gains its power, i.e. it becomes commodified and applicable. A black box works through the principle of „making manifest while hiding“ (Patriotta, 2003, p. 181).

In applying the notion of black box to organizations, Gerardo Patriotta suggests to understand organizational knowledge as a flow in a „knowledge cycle“ revolving around black boxes (figure 4.5).

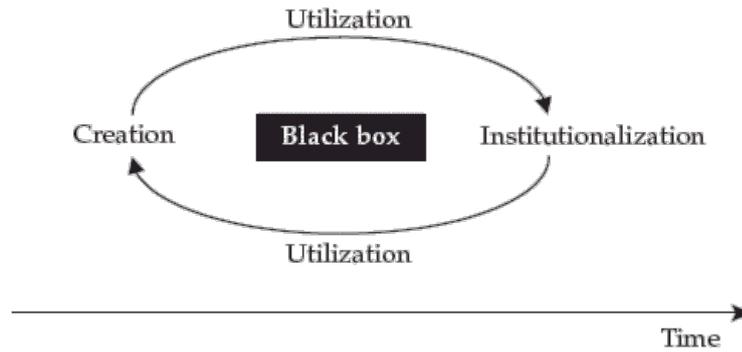


Figure 4.5: The „knowledge cycle“ (Patriotta, 2003, p. 179)

Knowledge then is a concept which is created in an open-ended process and subsequently closed into a black box by being utilized and institutionalized into the organizational practice. It is a „cycle“ because recurrent use of knowledge may encounter new problems which cannot be solved in the current way. This forces organizational actors to reopen the black box and to reconstruct its inner constitution.

It is obvious in figure 4.5 that Patriotta's „knowledge cycle“ maps both creation and application („utilization“). Hereby, its conceptual departure is the creation process and the problem of epistemological closure:

„(I)n order to be turned into a black box, knowledge has to be recognized as valid: the closure of the black box implies an act of social acceptance and legitimization. Therefore, in order to understand the transformations occurring along the value chain we need to explain the process whereby knowledge comes into existence, becomes socially accepted, and is eventually embodied in durable outcomes.“ (Patriotta, 2003, p. 178)

To detect these „processes whereby knowledge comes into existence“ Patriotta conducted various empirical field studies: via in-depth explorations he describes the events which lead to validation, social acceptance, and legitimization of knowledge. In the next chapters we will discuss two case studies from two different car manufacture sites in Italy (Patriotta, 2003, chapters 4-7). The first case study revolves around the construction of blueprints and routines for a new car factory („greenfield“). The second case study examines an old but yet operational factory („brownfield“) where stories and best practices have been developed and deployed in order to cope with occurring problems. Together with the notions of our discussions in chapter 3 we will be able to understand these

cases as illustrating the creation of *propositional knowledge* (blueprints and routines) and *narrative knowledge* (stories and best practices).

4.4 Creation of propositional knowledge: blueprints & routines

In a first field study, Patriotta observed design, construction, and the initial startup of a new Fiat car factory named „Melfi“ (Patriotta, 2003, chapter 5). He especially analyzed the construction of a foundational piece of knowledge: the blueprint of the new factory. As the „design concept of a new avant-garde factory“ (Patriotta, 2003, p. 182) the blueprint for Fiat’s „Melfi plant“ represents a crucial stock of organizational knowledge. The blueprint introduced a radically new model of Fiat’s way of car manufacturing and changed some basic assumptions of the traditional and predominant Fordist model. From experiences in the U.S. and especially in the Japanese automotive sector as well as from benchmarking results from other manufacturers, new elements were introduced into factory design. These new elements included team-based structures instead of strict hierarchies, a learning and proactive workforce, and especially the „lean“ production paradigm. The latter emphasizes on JIT („just-in-time“) and a „crystal pipeline“ which both aim at high performant production flows (no buffers), and at a tight integration with suppliers, for example, on-site-suppliers instead of warehouses (Patriotta, 2003, p. 99f.). The post-fordist paradigm, prevalent in Melfi’s blueprint, is not centered around a technology-determined hierarchical structure anymore, but outlines technology, skills, and division of labor as interdependently changing factors aligned with „tasks“:

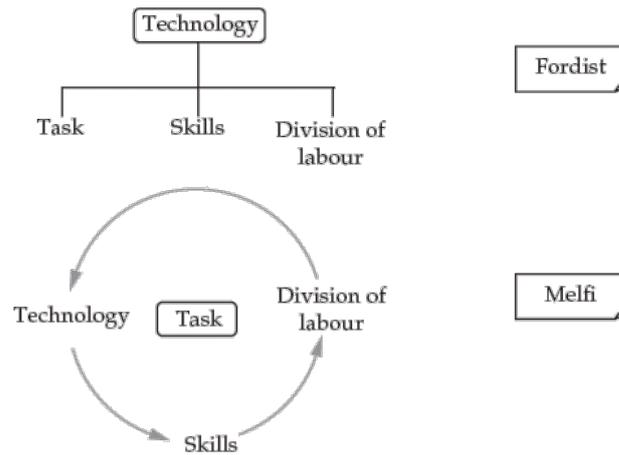


Figure 4.6: The Fordist blueprint vs. the Integrated Factory model of the new Melfi plant (Patriotta, 2003, p. 145)

All this required changes in the core workflows and structures compared with existing Fiat manufacturing plants, and resulted in a blueprint for a completely new type of „integrated factory“ (Bonazzi, 1994). As a set of written information, instructions, plans, and prescriptions of structure and processes of a new factory, the blueprint can be categorized as a typical case of *propositional* knowledge.

If we connect Patriotta's observations with Argyris & Schön's model of organizational learning (Argyris & Schön, 1978), then the blueprint may also be considered as a „theory of action“. Its creation was triggered by changes and disruptions in the overall practice of Fiat and, beyond that, by shifts within the automotive sector as a whole. The inefficiency of traditional Fordist concepts of car manufacturing (especially in comparison to new models of production developed in Japan) forced Fiat as organization to adapt its own way of production:

„Knowledge creation is initially triggered by some kind of discordance: environmental perturbations in the automotive sector call the current performance of the company into question and emphasize an urgent need for innovation“ (Patriotta, 2003, p. 183)

The observed knowledge creation at Fiat was born out of a (huge) learning cycle and feedback process between action and results, between theory and observation, between organizational knowledge and organizational practice. The blueprint hereby can be seen as an (again gigantic) hypothesis. It can be seen as

organizational knowledge which is based on a new paradigm of car manufacturing. In Fiat's organizational practice of car manufacturing, systemic perturbations occurred which could not be compensated within existing Fordist concepts any more. The new blueprint should be understood as organizational knowledge which was created out of this double-loop feedback with organizational practice:

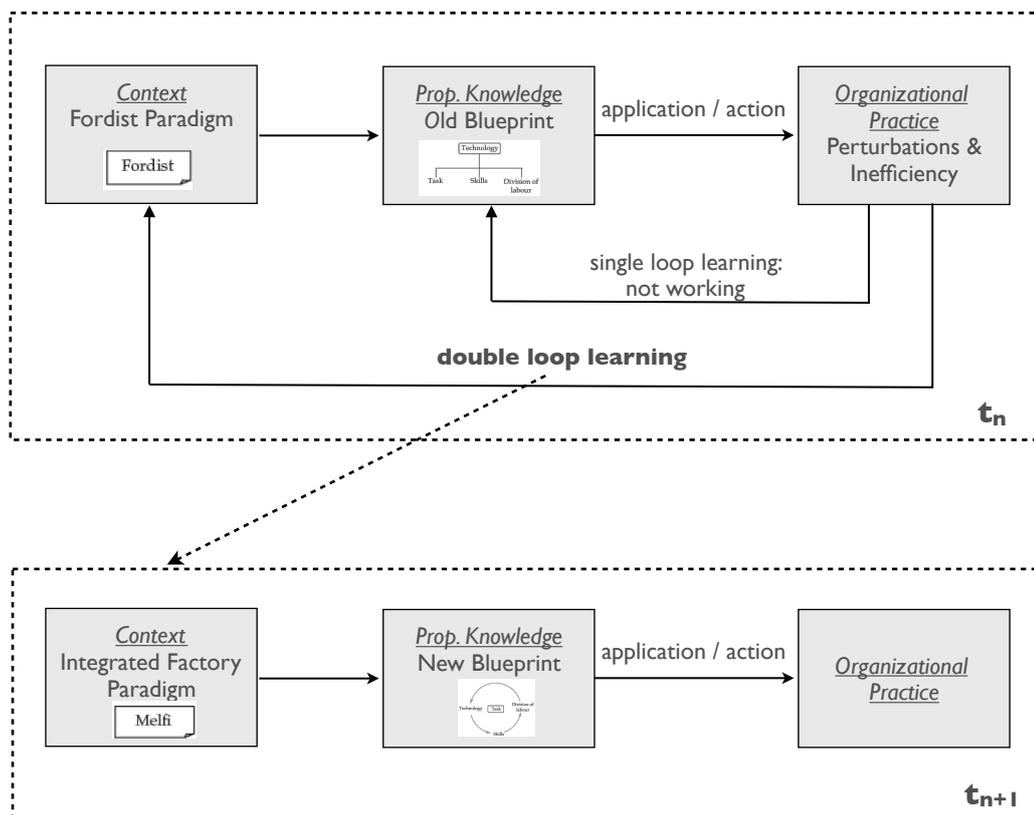


Figure 4.7: Creation of propositional knowledge and organizational learning at Fiat's Melfi plant

The inability of the existing production paradigm to cope with challenges of the transforming automotive sector generated a situation in organizational practice which demanded new concepts. And although it was clear *that* new knowledge had to be created in order to cope with the changed environment, it was far from clear *how* that knowledge had to look like. The creation of the new blueprint contained „strategic choices selected from a variety of options available“ (Patriotta, 2003, p. 183); it was contingent to diverse factors like benchmarking results, experiences with former projects, or new emerging standards in the automotive sector like JIT („just-in-time“) or TQM („total-quality-management“). It was also contingent to multiple actors like Fiat experts and

managers who inhabited different viewpoints from „conservative“ to „progressive“. The construction of this new piece of organizational knowledge went through a number of *controversial acceptance processes* until it ultimately received its final shape. At the end a finalized concept, the written and legitimized design, was „ready-to-use“ and its implementation „ready-to-go“. Former open-endedness and contingency had been sealed into a black box through translation into the materialized, finished „official“ blueprint. Once stabilized in a propositional form as blueprint design the controversial nature of its creation became invisible and inaccessible to its observers and users.

Of course, also this solid state of knowledge is only temporarily stable. In order to become an organizational concept with ontological effects the blueprint consequently had to be institutionalized in routines, rules, instructions, and so forth. This deduction and application of propositions from the Melfi blueprint into the new daily practice was a recurring knowledge creation process in itself (Patriotta, 2003, chapter 6). The blueprint needed to be translated to concrete organizational routines on all levels of the factory, into induction trainings, into instruction books, into human resources principles, into supplier handbooks, and so forth. This translation was also an open-ended creation process and, although this time within a single-loop, located in a permanent gap to the organizational practice.

Both the blueprint itself, as well as the resulting routines, are „the expression of controversial knowledge in so far as it contains hypotheses about the future functioning of organization, which need to be tested and put to work.“ (Patriotta, 2003, p. 184). Hence, „knowledge-as-theory“ counter-parts the organizational practice⁸⁷. Knowledge has to be „put to work“, i.e. it has to be integrated to daily practice and to prove being effective. But if then new (or old) problems occur („breakdowns“, „disruptions“), the applied knowledge did not meet the needs of practice. This usually triggers a new creation process which opens the black box and tries to provide new and better working solutions. Exactly here, between the occurring discrepancy in practice and a new adapted

⁸⁷ In discussing blueprints and routines as „clockwork“ of the organization, Patriotta remarks that „(i)n fact, *practices can be seen as the empirical counterpart of the clockwork.*“ (Patriotta, 2003, p. 187).

stock of knowledge there is a gap which opens a space for „controversy“, as well as for „ambiguity“ and „uncertainty“:

„In the process of knowledge creation, disruptive events can be seen as a source of controversy, since the lapse of time separating the occurrence of a disruption to its solution is *intrinsically characterized by ambiguity and uncertainty*.“ (Patriotta, 2003, p. 187, my emphasis)

The conclusion is that the „solution“ (new knowledge) to an „occurrence of a disruption“ (practice) is not fully determined. The whole process of knowledge creation (and application) is exposed to contingency and open-endedness.

4.5 Creation of narrative knowledge: plots & stories

The second field study leads us to a totally different, long serving, Fiat production plant labeled „Mirafiori“ (Patriotta, 2003, chapter 7). Here, Patriotta detects deeply situated organizational knowledge, which is about how to solve specific problems and breakdowns at the assembly line in a pressing plant. Organizational knowledge is identified as being imprinted in the „common sense“ of the workforce and encoded into narratives. Unlike propositional knowledge at Melfi, narrative knowledge at Mirafiori is not materialized in devices like charts, papers, or digital repositories. The outwards appearance of „common sense wisdom“ is encoded into language discourses among actors:

„While common sense is based on unspoken premisses, common sense wisdom is enacted in organizational discourse: narratives, anecdotes, jokes, and war stories. Narratives (articulated as plots) are the carriers of such a deep-seated, sticky, commonsensical stock of knowledge“ (Patriotta, 2003, p. 191)

Stories at the Mirafiori plant are used to make sense of complex circumstances, especially when dealing with breakdowns of machines. Similar to Orr’s copier machine technicians (chapter 1.2.2) managers and workers at Mirafiori perform analysis and problem-solving not along official instructions but use narrative „templates“ which are available within the stock of the organizational „memory“. Such templates are encoded into stories which transport information about specific situations and events from the past. Patriotta analyzed that such stories are designed as „detective stories“. Mostly, such a story begins with the description of a breakdown (e.g. a quality issue in a production lot). Then it nar-

rates the search for the source of the breakdown. It tells something about which hints were followed, which riddles were solved, which obstacles and throw-backs were encountered on the way, and so forth. Finally, the source of the error (either a person or a machine, or both) is localized and consequences are drawn.

Let us take a short look at such a „detective story“. Here is a short extract which was collected by Patriotta during his numerous interviews. A technologist retells a story about a specific case from the past:

„The customer had returned five containers of defective parts, 156 in total, because they presented a deformed hole. We took the faulty component from the repair team, it was about 3–3.30 p.m. Together with the UTE leader⁸⁸ of the second shift, I had a look at the anomaly. We consulted the maintenance person who was on duty when the lot was being produced. He said he had not done any work on the machines. Then we had a word with the die maintenance leader and with the line conductor of the second shift because they had completed the lot. Basically they had worked for three hours on Monday afternoon—because the problem occurred on Monday afternoon—before they changed the dies. At 6 p.m. they performed the die change. I wanted to find out whether they had noticed any problem. They insisted that they had not noticed any problem nor had they performed any intervention work. This was confirmed by a line conductor, who called me about a different problem, at around four o'clock, (...)“ (Patriotta, 2003, p. 157)

Then he goes on describing the further development of his investigative journey which finally terminates in the successful identification of the problem and in some lessons learned. Such an „emplotment“ of an equivocal happening is „idiosyncratic“ in its nature (Patriotta, 2003, p. 166), i.e. it contains very specific and contextualized content about the involved departments, persons, and machines. Furthermore, narrative knowledge is depicted on a concrete timeline in the past. All this makes it different from rationalized propositional knowledge which tries to abstract from exactly such „sticky“ and contextualized circumstances.

If such a story is retold and circulates through the organization, and if it is repeatedly used in sensemaking- and problem-solving activities, then the narrative has been translated to organizational knowledge. It then is connected with the (implicit) claim to be applicable to future events within organizational practice: „(Narratives) are stored in the organizational memory and at the same time

⁸⁸ „Unità Tecnologica Elementare“ („Elementary Technical Unit“): a unit, which is responsible for a specific work step in the production process

act as templates for the resolution of future problems.“ (Patriotta, 2003, p. 164). Hence, also narratives can be seen as hypotheses which counter-part organizational practice:

„detective stories seem to draw on a repertoire of existing solutions which have sedimented over time. Success stories of the past provide operators with effective templates for the solution of present occurrences.“ (Patriotta, 2003, p. 192)

Application of narratives is different to that of propositions: unlike the „if-then“ method of propositional knowledge, narratives are guided by an „as-if“ approach. The latter enables actors to recognize similar patterns and to reuse narrative templates of the past in new situations (see already chapter 3.3.2).

Thus, concerning the creation process, key questions are: „which cases will become part of the knowledge repertoire (...), which experiences will be retained, which occurrences will be remembered and therefore acquire the status of templates.“ (Patriotta, 2003, p. 164). Just as with the construction of the blueprint, also the creation process of narratives is not straight-forward. It cannot be coherently determined which story is a „noteworthy“ one and which not, because the criteria for such a selection are not universal. Relevance and problem-solving capability of a story cannot be derived from practice with full certainty, because many contextual factors are co-determining the selection. We may spot such contextual factors, if we take a look to another story, which is well known within the factory. Here it is told by a shift leader:

„Once a conductor accidentally broke a robot's arm. He immediately came to report the incident, assuming responsibility for it. This spared us the trouble of analysing the causes of the incident and made us save a considerable amount of time.“

This story can be seen as narrative knowledge, because it is represented in language, has meaning for actors, and may guide action⁸⁹. But the reason why it is knowledge is not because its content corresponds with reality of practice more than other stories, or because it per se allows problem-solving to be more efficient than with other stories. Although such factors could (and should) be important, the translation to knowledge is related to a multiplicity of other factors, too. That a story at Mirafiori is accepted and used is not determined by universal

⁸⁹ Moreover, we here can see that narrative knowledge not only conveys explicit problem-solving, but also emotions, power-relations, and organizational culture.

objective standards (like correspondence to reality or efficiency) but relativized to a

„broader cultural system of the integrated factory where working together becomes a sort of ethical principle. The narratives of the team members emphasize such values as commitment, dialogue, transparency, being humble and keeping a low profile, collective responsibility, harmony, and mutual respect“ (Patriotta, 2003, p. 160).

This „broader cultural system“ as background-context co-determines the knowledge creation (and application) process and participates in the translation of the story becoming organizational knowledge-as-narrative. These dependencies can again be depicted in connecting Patriotta's empirical findings with the feedback learning model (figure 4.8).

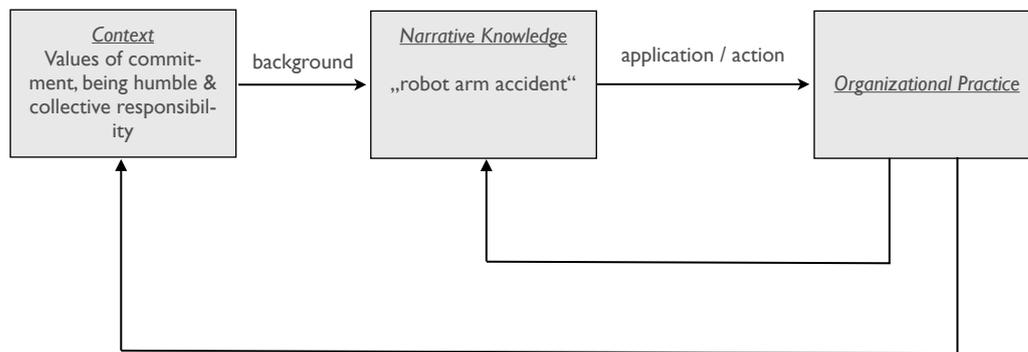


Figure 4.8: Narrative knowledge and organizational learning at Fiat's Mirafiori plant

4.6 Conclusion

Chapter 3 showed that knowledge is applied to practice in order to guide actors in their sense-making and action. This chapter 4 showed that practice triggers knowledge creation because actors may encounter situations in which their existing knowledge is not sufficient anymore. And just as application was no trivial execution of rules, also adaption and creation of knowledge is an open process. This was captured by the notions of *becoming*, *being*, *translation*, and *black-boxing*. Hereby, the result of knowledge-creation in general is not predetermined. Problems in practice may trigger knowledge-creation but do not fully determine its outcome. Knowledge-creation is an open-ended process of *becoming* which is heavily contextualized and dependent on heterogenous ele-

ments, background assumptions, and so forth. But at some point knowledge becomes a useful *being* as the flow of becoming is translated to a settled, accepted, and stable state. This results in useable outcomes like an accepted blueprint (propositional knowledge) or a sedimented story (narrative knowledge). Knowledge then is „utilized“ and „institutionalized“ as it gets more and more integrated into daily practice. In this state, knowledge can be understood as applicable black-box which blurs and hides the internal mechanisms, its history, and its contingent character. Of course, the stable character is only temporarily given. At the moment black-boxes are reopened (e.g. due to breakdowns in practice) the next contingent knowledge creation process is triggered.

This view is basically a theoretical interconnection between Argyris & Schön’s model of organizational learning (see figure 4.3) and Gerardo Patriotta’s knowledge cycle (see figure 4.5). Figure 4.9 depicts a graphical representation of that combined theoretical frame of knowledge creation (and consequently also application).

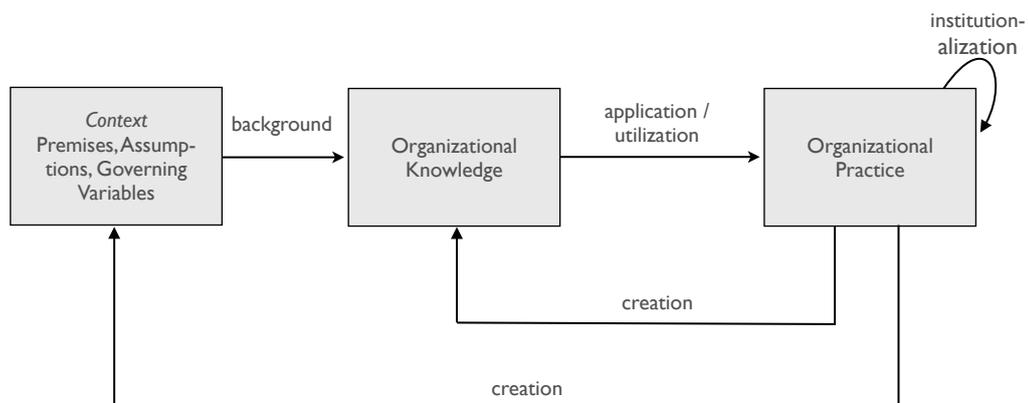


Figure 4.9: Organizational knowledge creation (and application), according to the models of „knowledge cycle“ (Patriotta, 2003) and „organizational learning“ (Argyris & Schön, 1978)

Another theoretical interconnection was presented between Patriotta’s empirical findings and Tsoukas’ theoretical explication of knowledge as propositional („knowledge-as-theory“) and narrative („knowledge-as-narrative“). In great detail, Patriotta followed the complex creation processes of a blueprint of a new factory (propositional knowledge) and of stories in an existing plant (narrative knowledge). We should put emphasis not only on the differences, but also on

the similarities between propositions and narratives. Both types of knowledge enable organizational actors to draw distinctions and to make sense of the chaotic flux of their experienced world; both types appear as *representations*, *meaning*, and relation to *action* (chapter 2.2.3) and allow to temporarily bring order to chaos. Just as propositional knowledge, also narratives can be seen as „a way of appropriating order from disorder and therefore can be connected to dynamics of knowledge creation“ (Patriotta, 2003, p. 193).

This chapter 4 also reinforced our understanding of the epistemological gap between organizational knowledge and practice. The distance between knowledge and practice is already obvious in our concluding figure 4.9⁹⁰. The distinctions (on the levels of representation, meaning, and action) provided by knowledge are not 1:1 inter-locked with the concrete organizational practice. This view was supported by the characteristics of knowledge application in chapter 3. It was also supported by our discussions on knowledge creation in this chapter 4. The result of knowledge creation is not simply the objectively best practical solution of a problem in practice, but is open to contingency and plurality. How the final shape of the blueprint looks like, or how a story becomes „noteworthy“ within the organization, is no mechanical selection process but a translation within complex actor-networks. Knowledge creation is embedded in a social environment with many heterogenous actors and contextualized background assumptions. Therefore, just as the *application* of knowledge to practice is not fully determined by the knowledge’s content (chapter 3), the *creation* of knowledge is not fully determined by practice (chapter 4).

⁹⁰ remember our arguments for decoupling the notions of knowledge from practice, of „epistemology“ from „ontology“ in chapter 2.2.4.

Chapter 5: From a theory of organizational knowledge to an organizational epistemology

5.1 The epistemological gap & underdetermination

Examining the *application* of organizational knowledge in chapter 3 we asked the question: how is knowledge applied to organizational practice? How is propositional and narrative knowledge related to the heterogenous particulars of the concrete organizational field? Answering that question revealed a gap between knowledge and practice as we saw that organizational knowledge (both as propositions and narratives) underdetermines its utilization, i.e. the way how some knowledge is applied cannot be determined by that knowledge alone. Propositional knowledge (e.g. as rules or routines) leaves „loopholes“ open and its application is contingent to the heterogenous social context. Any organizational actor needs to get to grips with the gap between generalized concepts and the particularities of practice in which those concepts have to be applied. Narrative knowledge, on the other side, does not close that gap but embraces it. It „takes the bull by the horns“ because it - contrary to propositional knowledge - is non-abstract and contextualized in the first place. Its content does not subsume particulars under general categories, but is particular itself. Hence, it is open-ended and ambiguous in its very nature. Narrative knowledge contains plots related to concrete and singular events taken from practice. But of course it *is* not practice; it has to be *applied* to practice; narratives are „templates“ and part of the available stock of organizational knowledge. As such it „helps to conserve and mediate individual experiences and can be used as background knowledge when experiencing novel situations.“ (Rögnvaldur, 2006, p. 348). Hence, narrative knowledge, just as propositional knowledge, is intended to be a reusable concept which ought to enable actors to cope with future situations. From this point of view also narratives are („dynamically“) generalized concepts counter-parting heterogenous practice. Thus, it does not not eliminate underdetermination, but instead offers an alternative way for dealing with it.

By looking at knowledge *creation* in chapter 4 we examined the epistemological gap from the other direction, i.e. from practice to knowledge. We

asked the question: how is knowledge created out of the organizational practice? Unlike from the other direction, we did not start from the open-endedness of knowledge and its relation to practice. We started with the organizational practice, from where knowledge creation is triggered (e.g. through perturbations or breakdowns) as a controversial and open-ended process. From the viewpoint of creation there is a gap between knowledge and practice because the construction process emerging out of the practice does not follow a predetermined path. It is open to a multitude of possibilities which are blurred and finally hidden in organizational concepts as „black boxes“. This reveals another dimension of the underdetermination problem. It stems from the fact that the problematic practice from which new knowledge is created, cannot alone determine which solution is the definitive one. The connecting arrows from practice to knowledge in our concluding figure 4.9 should not lead to the interpretation that knowledge provides unequivocal solutions to unequivocal problems. There are no universal criteria of how problematic situations in practice ought to be solved.

This view contradicts the paradigm of „rationalistic epistemology“ (see the upcoming chapter 6) which sees ideal knowledge as the objectively rational explanation (or solution) to a problem. We will see that this monistic and anti-pluralistic view is highly problematic for knowledge in general (chapter 6) and even for scientific knowledge (chapter 7). Thus, underdetermination is characteristic for any kind of knowledge. Empirical sciences, for instance, create theories to explain observed data. And also here there is no unequivocal path from particular data to generalized theories. The reason for that is that knowledge (theories) contains more than just what it subsumes (data). In the creation of scientific knowledge it is not only general rational methods which determine how data is to be subsumed by theories. Many other social factors and background assumptions are (and have to be) involved as well, like the aims of the respective scientific community, general assumptions about the structure of the research objects, used instruments and methods, the paradigm from which research is pursued, and so forth. The consequence is that no universal criteria can fully determine successful knowledge creation, i.e. the final subsumption of data under generalized theories. The factual outcome of scientific knowledge

production is then contingent to the social context of knowledge creation (we will in detail analyze this issue as the „underdetermination problem“ in chapter 7).

We already detected something similar at the core of organizational knowledge creation. The latter is characterized by potential plurality and open-endedness of its final shape instead by a predetermined mechanism. Also here, particularities (organizational practice) are subsumed under generalizations (organizational knowledge). And also here there is no ideal, unequivocal, or purely rational way from particularity to generality. This is important, because the tangible manifestations of knowledge creation (e.g. blueprints, routines, or best practices) often make us forget that they also could be different, that they are inherently contingent concepts (a feature concealed by being a black box). With the underdetermination problem in mind, organizational studies are motivated to reveal socially embedded creation processes and to locate the involved factors which finally lead to institutionalized knowledge. This is what we saw at the organizational studies author Gerardo Patriotta in chapter 4: to describe organizational knowledge, basically is to open black boxes and to analyze their contingent inner constitution, to trace their history, and to describe how they became what they are.

This also connects creation with application, because black boxing is partly accomplished by the application of knowledge into organizational routines, accepted instructions, embodied, and implicit actions. Black boxing translates controversial and contingent epistemological construction processes into the structure of the ontological field. Again, this is what interests organizational studies and authors like Tsoukas and Patriotta: to empirically detect and to theoretically understand the making of black boxes, the creation of knowledge, and its application to organizational practice.

5.2 Description vs. Normativity

But we should be aware that the theoretical concepts discussed as well as the empirical field studies presented still lack a sufficient *normative* reading of knowledge. Just like Tsoukas' work, also Patriotta's approach is *descriptive* and

ultimately directed towards empirical research. Their main aim is not to bring up normative criteria in order to answer the question of how knowledge should be justified, accepted, and distinguished from non-knowledge. Instead, the contingent and open-ended character of knowledge is embraced: knowledge is not compliance to any epistemological criteria, but simply what has been established and accepted. This acceptance process, the „closing of the box“, is what interests social scientists like Patriotta and Tsoukas. From their descriptive standpoints they (correctly) infer that the social factors which lead to acceptance of knowledge can virtually be anything. Just like for ANT and „laboratory studies“, *knowledge is ultimately an empirical phenomenon*. A phenomenon embedded in complex creation processes which are to be traced and made explicit via observations and methods of social sciences.

But we should remind ourselves that there is another reading of knowledge which is challenging that view. Knowledge can be seen as more than something that is created, applied, or transformed. It can be seen as more than a process or content: it can be seen also as a *claim*. Knowledge inherently *claims to be valid* (Adams, 2004, p. 228; Habermas, 1984; Schreyögg & Geiger, 1997, p. 83), it *claims* to be true vs. false, it *claims* to correspond to reality vs. being an illusion, it *claims* to be knowledge vs. mere belief. That knowledge as a claim is not only a theoretical notion but fairly close to our daily experience: we all intuitively sense that only *believing* something can be different from *knowing* something. But what is the significant difference between something which is only believed and something that is really known?

What makes knowledge to knowledge is not only that it is created and applied, but also that it is more than mere belief (or more than just a proposition, or more than just a narrative, etc.). Traditional epistemological approaches, beginning with Plato, have claimed that a belief in order to qualify as knowledge has not only to be a „belief“ but a „justified true belief“ (Plato / Cooper, 2001, Theatetus 201). From its outset, Western epistemology has always been in search of normative criteria of knowledge, i.e. what something has to fulfill in order to be valid knowledge (Fuller, 2002, p. 61). This is why we, in part II, will take a closer look at different philosophical approaches which try to de-

velop such epistemological criteria of knowledge. Some of them traditionally are based on pure reason and logic, some of them try to incorporate social complexity. But it is important to see that what unites normative epistemological conceptualizations is their *non-relativism*: not anything ought to be knowledge. This is because it has to fulfill specific epistemological criteria like truth, correspondence to reality, justification, or - in more „social“ epistemologies - compliance to aims and standards of a community, critical discourse, usefulness, and so forth. In the next part we will try to systematize and structure these criteria taken from the two paradigms of „rationalistic“ (chapter 6) and „social“ (chapter 7) epistemology, in order to come up with a conceptual toolkit which can be used to extend the merely descriptive theories of *organizational knowledge* by a normative *organizational epistemology*.

But what makes the latter *normative*? Is not any theory of organizational knowledge normative? Are not Tsoukas as well as Patriotta defining normative criteria for organizational knowledge? Well, they draw conclusions from empirical and theoretical research to define *attributes* of organizational knowledge: as we have seen, knowledge may be classified as propositional, narrative, individual, collective, personalized, tacit, explicit, and so on⁹¹. But all these notions are rather *epistemic attributes of organizations*, than *epistemological criteria of organizational knowledge*. Epistemic attributes are about the observable (and theoretically describable) *manifestations* of knowledge like how and in which forms propositional knowledge exists in organizations. Epistemological criteria, on the other hand, are about *validation* like what should qualify propositions to become valid knowledge. The former says how something *is*, the latter how something *ought to be*. The former is *descriptive*, the latter *normative*⁹².

⁹¹ An example of such a classification is also our three layers concept of distinction-making (chapter 2.2).

⁹² Just consider moral philosophy: it is one thing to define how and from where human action originates, which factors determine them and how actions are related to individuals (this is a topic of anthropology, cognitive science, psychology, or sociology). But it is another thing to try to formulate which are *right* and which are *wrong* actions, and which criteria could be governing the evaluation of actions being ethical right or not (this is a topic of moral theory and ethics). E.g. Kant's moral philosophy strongly demonstrates this division between description and normativity. For Kant even the question if human action is free or determined by natural laws, i.e. the question of freedom, can be discussed independently from morality. What makes an action ethically right or not is not affected by humans being free or not (Kant, 1785/2005). For a detailed discussion on that topic see (Seirafi, 2010, chapter 11).

So far, organizational studies have done a great job in identifying epistemic attributes of organizational knowledge but very few have been engaged in asking for epistemological criteria. Very few have been trying to integrate the unique epistemological questions of philosophy to descriptive approaches. It seems like organizational studies and knowledge management up to now have overlooked that dimension of knowledge. This need for normative distinctiveness will be the driving force of our further inquiry.

5.3 The need for normative distinctiveness

A similar argument has been introduced by Schreyögg & Geiger who criticize knowledge management literature to rely on a too blurry and undefined concept of knowledge (Schreyögg & Geiger, 1997, 2005, 2006). Driven by the fear of missing some aspects of organizational practice many authors tend to declare knowledge as anything that leads to action (Schreyögg & Geiger, 1997, p. 79; 2005). Knowledge then becomes an „umbrella notion“ which includes implicit knowledge, tacit skills, competencies, and all other factors leading to action. This is backed by pragmatist-phenomenological underpinnings like the social constructivist concept of „Lebenswelt“ (Berger & Luckmann, 1969), like the idea of tacit knowledge (M. Polanyi, 1967), and generally by the equation of action with knowledge (Maturana & Varela, 1987). Although these approaches are useful to understand the groundings of action in organizations (and elsewhere), Schreyögg and Geiger claim that knowledge has to fulfill two crucial features which are mostly overlooked (Schreyögg & Geiger, 1997, p. 83ff.):

- (1) Knowledge has to be *contestable*, i.e. it should be available and accessible in a way which is open for reflection, discussion, and falsification. Knowledge has to be treated as verifiable „validity claim“ which is open for discursive interaction.
- (2) An adequate concept of knowledge should in general include the ability to *distinguish* between right and wrong, true and false, appropriate and inappropriate, or „high“ and „low“ quality knowledge. Note that such a distinction does not require that „true knowledge“ can be identified with full cer-

tainty. Validation is always subject to falsification and the state of „true knowledge“ only temporary. But that does not imply that it is impossible to develop meaningful criteria for validation.

Feature (1) would become somewhat problematic to fulfill if knowledge would only be defined as the thing (or „process“) which makes action possible. In that case knowledge could be anything which can be defined as a driving force behind action. According to the two authors, this is problematic because in order to be part of a reflective discourse, knowledge should in general be able to be put into the form of language and argumentation. This is of course opposed to the idea of tacit skills being knowledge. Therefore, Schreyögg and Geiger exclude implicit knowledge from their concept of organizational knowledge (Schreyögg & Geiger, 1997, p. 83). According to this view, knowledge has to be encoded into some sort of language, because only in this form it can enter critical discursive interaction where it can be reflected, contested, evaluated, and eventually falsified.

In our 3-level-view on organizational knowledge (chapter 2) the possibility of discursive interaction is given within the dimension of „representation“, i.e. knowledge as codified in written or spoken words, or in other concepts which makes it inter-subjectively exchangeable. If knowledge is represented it can be communicated and negotiated. Knowledge as communicable concept was also given in our typifications of propositional and narrative knowledge (chapter 3 & 4): both reside within the realm of language. Remember, as Tsoukas discovered the insufficiency of propositional knowledge (chapter 3) he did not extend it by, for instance, tacit knowledge. Instead, he introduced narratives as the missing type of knowledge⁹³. The tacit dimension then comes in not as specific knowledge-type but as a factor when knowledge is applied to a specific context.

However, the question remains if it really is necessary to go as far as Schreyögg and Geiger do and to deny tacit knowledge being knowledge. To make tacit knowledge inter-subjectively exchangeable (and also somehow dis-

⁹³ See also Daniel Geigers emphasis on narratives as the „core“ of knowledge management (Geiger, 2006; Schreyögg & Geiger, 2006).

cussable) may not be impossible. Remember Nonaka's & Takeuchi's conversion process of „socialization“ which was about to communicate and to share implicit knowledge: the master shows bread baking and the apprentice imitates, thus gradually acquiring tacit knowledge (chapter 2.3). Here, *representation* is in use, although knowledge is not mediated by language as alphabetically encoded sign-system. Instead, the master applies another representational sign-system by using (parts of) his body to express tacit knowledge. Hence, we could claim that „representation“ appears not only as spoken or written words, but may also be explicated via more incorporated sign-systems like body movements or haptic performance.

Feature (2) is the actual normative part of Schreyögg & Geiger's argument, because it is about what it means for knowledge to be „valid“. What has to be fulfilled for knowledge to be valid? Which conditions have to be given, for instance, for a sentence to be true⁹⁴? At this point, we leave the discussion about *epistemic attributes* (what is a sentence?) and enter the realm of *epistemological criteria* (what is a true and justified sentence?). Asking for such epistemological criteria inherits difficult questions about truth and justification which have been discussed for a long time in the philosophical discipline of *epistemology* (or as Schreyögg & Geiger state, of „philosophy of science“) but so far has hardly been reflected in knowledge management literature:

„Philosophy of science first of all has always aimed at differentiating knowledge from other concepts such as simple opinion or meaning. At the core is the basic distinction between true or false knowledge and a theory of truth that can legitimate that differentiation.“ (Schreyögg & Geiger, 1997, p. 82)

Although we certainly cannot provide a universal „theory of truth“, we will in part II get acquainted with different theories of epistemological criteria for

⁹⁴ As in feature (1) this again raises questions concerning tacit knowledge. Just as to exclude tacit knowledge from being communicable, Schreyögg and Geiger also exclude it from possibly being verifiable. Because (for them) tacit knowledge cannot be put into words and cannot be part of a discourse, it can neither be verified nor falsified.

But is it really impossible to understand also tacit knowledge as a validity claim? If I, for instance, attribute the skill of bike-riding to a person I do attribute „tacit knowledge“ of bike-riding to that person. Although on a communicative meta-level, one may ask back: „Verify it! Is this person really capable of riding a bike?“. In chapter 8.2 we will discuss this more in detail, whereby again the gap between knowledge (bike-riding as implicit knowledge of a person) and practice (the concrete event of this person riding a bike) will play a crucial role: knowledge (even tacit knowledge) always involves some kind of distance or abstraction from practice making it open-ended, changeable, as well as contestable and verifiable.

knowledge. Part III will shift these criteria to the field of knowledge in organizations. Schreyögg & Geiger draw from Habermas discourse theory (Habermas, 1984) and Toulmin's argumentation theory (Toulmin, 1958) to explicate the normative characteristics of knowledge. We will try to develop epistemically normative criteria for the social context of knowledge creation drawing from the „social epistemology“ of Helen Longino (Longino, 2002), a philosophical approach which will be discussed in part II and then will be connected to organizations in part III. The latter may be seen as an unnecessary step, because knowledge in organizations is something different than that in the sciences (or than that of epistemologists): is not knowledge as a true and justified sentence something totally different than, for instance, an organizational narrative? The former has to be true, the latter „only“ useful. Why should epistemological criteria for the former be of use for the latter? The answer is that knowledge ultimately always is bound to pragmatic ends. This means, also scientific knowledge is never simply the true correspondence to reality, but has to „work“ in specific settings according to specific aims and standards within a social field. The same is true for knowledge in organizations. Acceptance and confirmation for both scientific and organizational knowledge is relativized to respective social fields and communities, thus making an a priori validation impossible. But this does not mean that a „social“ epistemology cannot set up normative criteria for knowledge creation. In contrary, such a social epistemological project has been carried out (Longino, 2002) and hopefully will give us valuable input for our integration of normative epistemological elements with the theory of organizational knowledge.

We will call that normative extension of a theory of organizational knowledge, *organizational epistemology*. Such an organizational epistemology supplements *epistemic attributes* with *epistemological criteria* because it discusses not only what organizational knowledge *is* (as something that is ob-

served and typified) but also what knowledge *ought to be* (as criteria distinguishing true from false knowledge). It is not only *descriptive*, but *normative*⁹⁵.

5.4 Towards an organizational epistemology

5.4.1 Starting point & desideratum of an „organizational epistemology“

It is important to mention that a normative conceptualization of knowledge was already (although only implicitly) inherent to some already discussed approaches in organizational studies. Organizational concepts („theories of action“, „propositions“, or „narratives“) are not only what they are, i.e. rules, stories, or skills which are black-boxed and institutionalized. They are also expected to be effective for organizational actors in order to carry out action. And if knowledge is not able to sufficiently provide meaningful distinctions for action, breakdowns and problems in practice occur. This is why knowledge is in place only as long as it is not contested by new or adapted knowledge. Within feedback processes organizational knowledge is exposed to critical scrutiny and falsification. This implies that - in context to the specific organization - there are concepts which tendentiously are better than others. This also implies that there is good and bad, true or false knowledge. If this was not the case, there would be no reasonable need for change, adaption, and the creation of knowledge. Then „feedback“ and knowledge creation would happen by pure accident. The question is, whether we are able to come up with criteria giving orientation for knowledge creation, or not. Criteria that would help us to generate a knowledge flow drifting towards „true“ instead towards „false“. Because if we are not successful in providing such epistemological guidance, then we have to leave that to the practice, admitting that all we can do is to empirically observe and explain which knowledge becomes „established“ and accepted“, and which not.

Of course, we do not have to deal in absolutes. As knowledge is always provisional and open to „falsification“, truth is a matter of *degree* rather than of

⁹⁵ A similar distinction has been introduced by Steve Fuller (Fuller, 2002). According to Fuller, we can distinguish between „empirical indicators of knowledge“ on one side and formal non-empirical knowledge criteria on the other (Fuller, 2002, p. 58f.). For Fuller of course, this is a dichotomous separation, i.e. a „materialistic“ understanding of knowledge as embedded in spatio-temporal context vs. a „platonistic“ understanding of knowledge as „transcendent“ view from nowhere. We will try to overcome that dichotomy in part II.

absolute value. But this does not diminish a normative understanding of knowledge. It just traces truth on a continuum instead on a discrete matrix. Notions like „truth“, „justification“ or „correspondence with reality“ will be reconceptualized and dynamized in part II where a „social“ epistemology will help to detect more pragmatic and flexible understandings. Truth is then not understood as claim towards a universal, unequivocal 1:1 correspondence with an objective world, but rather as a critical social interaction of confirmation within the aims and standards of a specific community. Such an extended view of a normative understanding of knowledge will be identified as being also applicable to non-scientific contexts, like organizations⁹⁶.

For Tsoukas and Patriotta (and many other organizational scholars) knowledge is anything that enables individual and collective agents to carry out their actions. This „anything“ can be whatever fits to our discussed descriptive frameworks, for example, propositions, narratives, tacit knowledge, competencies, and so forth. But from a philosophical standpoint this characterization is not enough, because what interests us is not only appearances of knowledge, i.e. what interests us is not only *epistemic attributes*. If we seriously want to operate with the notion of knowledge then we also need to be interested in answering the question what makes knowledge to be true, good, or useable. What makes it to be not a mere belief, not a mere content? What interests us beyond epistemic attributes are *epistemological criteria* of knowledge. In the field of science we may ask: what should make a particular theory more appropriate than another? In the field of organizations we may ask: what should qualify an organizational concept in becoming part of the stock of knowledge of an organization? Descriptive approaches would state (driven by the epistemological gap and the underdetermination problem) that this question cannot be answered a priori and is fully contingent to what is happening „on the ground“. All we

⁹⁶ Normative epistemology is neglected by most organizational researchers. One reason for this may be that (a) the concept of truth seems inappropriate for the organization because the latter is about getting things to work rather than producing true knowledge. Another reason may be that (b) truth is conceived as a too narrow concept which may (if at all) be applicable to scientific contexts but not to such complex social systems like organizations (Nonaka, et al., 2008, chapter 1). The complex social structure of an organization, the argument goes, requires a more holistic concept of knowledge. It is our aim to show that in drawing from more flexible approaches like „social epistemology“, social embeddedness of knowledge can be appreciated *without* losing normativity (chapter 7).

can do is to observe knowledge formation, utilization and institutionalization processes, and their determining „real world“ factors. Such descriptive inquiry may illuminate and extend our understanding of the complex mechanisms of knowledge creation in science and organizations, but only to the price of epistemic relativism. Knowledge is then what is put into place, no matter if enforced by despotic leaders, if incrementally grown by unreflected practice, or e.g. if resulting out of pure luck. As long as some organizational concept provides distinctions to act in the world and is translated into organizational practice it is knowledge. Note that this relativism is not only problematic for normative philosophers. Organizational scholars as well as practitioners may be highly interested not only in how knowledge is phenomenologically graspable but also in what makes good, or appropriate knowledge, what makes the difference between „high“ and „low-quality“ knowledge (Schreyögg & Geiger, 1997, p. 94). Thus, epistemological criteria are not only fancy concepts for philosophers, but probably could provide orientation and guiding principles for organizational knowledge creation.

Hence, I would propose to use the notion „*organizational knowledge*“ as outlined in this first part of our inquiry. This is to understand knowledge as performative organizational concepts with all the attributes developed in the last chapters: knowledge on the three different dimensions of representation, meaning, and action; knowledge as in a „strong sense“ enabling distinction-making and organizational action; knowledge as propositions and narratives, etc. Such understanding of the epistemic attributes of organizations can be used as theoretical toolkit for empirical field studies as well as a mindset for the „reflective practitioner“ who pursues a deeper insight in the nature and types of knowledge in organizations.

On the other hand, I would propose to introduce the notion of „*organizational epistemology*“ as to identify a normative account of organizational knowledge which tries to formulate epistemological criteria for qualifying „good“ or „high-quality“ knowledge: we do not only want knowledge to make distinctions, we want knowledge to make *right distinctions*. But are there

grounded criteria to define how knowledge ought to be in order to be rather knowledge than non-knowledge (or false knowledge)?

5.4.2 Summarized research questions

Our previous discussions have indicated both a desideratum and a demand for what we have called „organizational epistemology“. Our so far defined questions can be summarized and and systematized into following three research questions:

Q1

How can a normative epistemological account for organizations be grounded and justified?

Q2

Which normative criteria and guiding principles for organizational knowledge creation can be developed out of such a foundation?

Q3

How can such guiding principles be applied to real world organizations?

5.4.3 Research hypotheses

Parts II and III of this inquiry will be led by these questions and will try to define and validate following research hypotheses:

H1

A normative epistemological account for organizational knowledge creation has to be grounded in the philosophical discipline of epistemology. As we have already discussed organizations in depth, the next step, obviously, is to address the notion of epistemology. Therefore, we are going to discuss the philosophical discourse of epistemology in part II. Based on Plato's famous definition of knowledge a broad literature (mostly in the analytical anglo-american tradition) has evolved which aims at defining normative rational-logical criteria for

knowledge. Such a „rationalistic epistemology“ (chapter 6) tries to bring up an a priori and final definition of knowledge as „justified true belief“. This would give us a foundation for knowledge in organizations too. Unfortunately, a critical reflection will reveal internal incoherences of rationalistic epistemology. By focusing on the „Gettier problem“ we will discover that in general no rock-solid definition can be provided by a purely rationalistic approach. Knowledge will be identified as being generally open-ended. So no matter how hard we try, no rationalistic criteria may allow an analysis which would validate a given knowledge proposition as true or false with universal certainty.

From that negative outcome many authors were tempted to discard the normative epistemological project as a whole. Inspired by the postmodern continental tradition, approaches like Actor-Network-Theory or „laboratory studies“ deny any a priori definition of knowledge⁹⁷. According to these positions, knowledge is a purely social phenomena created in complex social relationships: true knowledge is *what is accepted and enforced as „true“*. All what is left is to conduct empirical research in order to systematize and explain the observed truth- and knowledge-building processes. The old dream of philosophy to theoretically guide truth-seeking conduct is over.

Although the two positions (normative rational epistemology vs. descriptive social studies) seem to be trapped into a dichotomy, there is a third way which on one hand accepts the social and open-ended character of knowledge creation, but on the other preserves normativity and the search for epistemological criteria. We will work out how such a „social epistemology“ continues the epistemological project but opens it towards social complexity and contingency (chapter 7). Here, we will encounter challenges already discussed, like the epistemic gap and the underdetermination problem. We will also encounter epistemological responses to these challenges. Helen Longino’s „social epistemology“ offers such a response and suggests to establish epistemological criteria at the social level of knowledge creation. Acknowledging that what becomes knowledge is determined within a social context (within a specific scientific community with specific goals, specific standards, etc.), social epistemology

⁹⁷ A noteworthy exception in the analytical tradition is W. O. Quine who also denies an a priori concept of knowledge (Quine, 1969a, 1969b)

defines epistemological criteria which are directed towards *critical social interaction*. What we can do then is not only to *describe* knowledge creation (e.g. via field studies) but to also *prescribe* social criteria for successful knowledge creation. Such an attempt is pluralistic, open-ended, and social, but not relativistic.

H2

Criteria and guiding principles for organizational knowledge creation can be derived from a „social epistemology“ which outlines general criteria of the social environment of knowledge creation and application. Such an „social epistemology“ is presented by Helen Longino (Longino, 1990, 2002). It opts for a social environment of knowledge creation which is open to critical discourse, provides venues of criticism, the active uptake of criticism, transparency of goals and standards of the respective (scientific) community, intellectual equality, or potential plurality of contributions. In part III we will try to connect „social epistemology“ with organizational knowledge studies and develop guidelines for organizations (chapter 9).

H3

The developed guidelines can be used to describe and evaluate real world organizations. This will be explicated and presented along an extensive use-case in chapter 10. Here a specific part of the company „Seven-Eleven Japan“ will be examined by using the presented knowledge creation concepts and guidelines.

5.4.4 Summary

The way how underdetermination and the epistemic gap is tackled in social epistemology may guide a response to challenges in organizations. A response which gives us the opportunity to develop not only typologies and empirical concepts about organizational knowledge, but also criteria which guide successful knowledge creation. Hence, an organizational epistemology is not only relevant to organizational studies (and the empirical observation of knowledge

creation). It is also relevant to practitioners who aim at reflecting, evaluating, and designing knowledge creation spaces in organizations.

Organizational epistemology can be seen as the quest for developing normative criteria of knowledge creation which have been widely neglected by research so far. However, organizational epistemology, as outlined in the inquiry, is not *substituting* but rather *supplementing* the hitherto available understanding of organizational knowledge. Subsequently, additionally to the descriptive theory of organizational knowledge (part I), an organizational epistemology (part III) would provide a second theoretical toolkit for researchers in order to normatively evaluate knowledge creation environments. It would also provide practitioners with guiding principles for designing appropriate knowledge creation environments. In introducing normativity our ultimate aim is to provide a ground for a better understanding of how to enable successful spaces for knowledge creation in organizations.

Part II - EPISTEMOLOGY

Chapter 6: Rationalistic Epistemology

Epistemology is the study of knowledge. As philosophical discipline it has a long tradition and ranges from questions like how knowledge can be defined, how it is structured, and which limits are given to it (Steup, 2005). Traditional attempts, beginning with Platos „Theatos“, try to expose the rational criteria of knowledge, i.e. to universally define the core distinction between a mere belief and knowledge. Its basic (and, as we will see, questionable) idea lies in the conviction that there ultimately is one ontologically given universal truth which is the same for all cognitive agents. According to this monistic and objectivistic view, there consequently has to exist a fixed set of true beliefs as a subset of all possible beliefs. Thus, a cognitive agent possesses knowledge if it can be rationally shown that its beliefs are true. The main epistemological question then is, how knowledge is justified, i.e. how the separation between mere beliefs and knowledge is accomplished. Note that the answer to that question, no matter how it looks like, will have a *normative* stance. This is because traditional approaches to knowledge not only describe, but prescribe: „for beliefs to be knowledge, they have to comply with following criteria:...” is the explicit or implicit attempted solution of these approaches. In this chapter 6 we will outline the basic concepts of such a traditional approach, as well as its contemporary proponents. We will subsume that paradigm as *rationalistic epistemology* and discuss its main issues.

In chapter 7 we will deal with an approach, which tries to overcome the traditional attempts of rationalistic epistemology. This *social epistemology* looks for the distinction between knowledge and belief not at the level of rationalistic universality, but at the social processes in which knowledge creation is embedded. For this alternative epistemological approach there is not one universal truth which would be accessible by all agents, if they would only follow rational criteria of truth. It rather defines knowledge relative to the respective community where it is created. Nonetheless, knowledge ought not to be any content that is created within a social group. Rather, social epistemology inherits the normative stance of the rationalistic paradigm and strives for defining

criteria for successful knowledge creation. But instead of locating the distinction between knowledge and non-knowledge to some hypothetical rational agents, the distinction is defined as a social process. Thus, how this social process looks like (or better: how it should look like) will turn out to be the main question for „social epistemology“. But first let us take a look at the paradigm of „rationalistic epistemology“.

In the wake of western thinking Plato brought up the first systematic definition of knowledge which usually is being described as „justified true belief“ (Plato / Cooper, 2001, Theaetetus 201, Meno 298) :

S knows p if (and only if)

- i. p is true
- ii. S believes that p
- iii. S is justified in believing that p

Other definitions are structurally equal, like, for instance, in (Chisholm, 1957, p. 16)

- i. S accepts p,
- ii. S has adequate evidence for p, and
- iii. p is true.

or in (Ayer, 1958)

- i. p is true,
- ii. S is sure that p is true, and
- iii. S has the right to be sure that p is true

Inside the analytic, rationalistic discourse, the justified-true-belief triad has been widely accepted, although varied in many ways (Steup, 2005). There is high agreement on the fact that justified beliefs tend to „co-vary“ with truth (Adams,

2004, p. 228), i.e. that where belief (p) is justified, or „illuminated“ (Nozick, 1981) it is more likely that p also is true. Therefore, disagreement between different epistemological schools are mainly not driven by questioning (i) how something can be true or (ii) how something can be believed, but rather on (iii) how a belief can be justified. Hence, the search for proper methods and criteria for belief-justification marks one main challenge of the rationalistic discourse⁹⁸. Adequate creation of knowledge is therefore connected to the transformation („justification“) of beliefs:

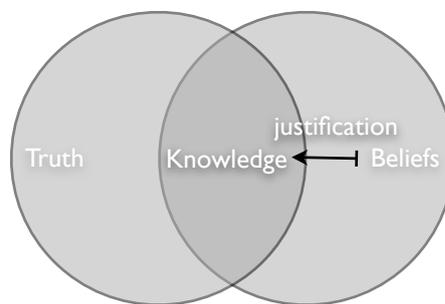


Figure 6.1: The basic idea of rationalistic epistemology: knowledge as justified true belief

6.1 Terminology

Before we go on let us clarify some terminology. According to common vocabulary from rationalistic epistemology, we will define *beliefs* as expressed through *propositions*, whereby propositions are constituted by language *terms*. For instance, the belief of Smith that „Jones has 10 coins in his pocket“ is expressed in the proposition

(p) Jones has 10 coins in his pocket.

⁹⁸ Again, we will refer to all these analytical approaches (which try to find logical, formal, and universal explanations for the justification of knowledge) as „rationalistic“. In their view (as we will see) „knowledge“ can be fully rationally encoded and is totally independent from any „non-rational“, social, or other presumably biasing factors. The underlying ontological assumption is (as we also will see) that there is an objective truth which (at least theoretically) corresponds to knowledge (and not corresponds to non-knowledge, i.e. to mere belief).

Our term of „rationalistic epistemology“ should not be confused with „rationalism“. The latter is a term from history of philosophy which subsumes all those approaches which give the rational mind („rationalism“) priority to sense impressions („empiricism“) as the ultimate source of knowledge (Markie, 2008).

Hereby, „Jones“ or „10 coins“ are syntactically constructed terms. Of course a proposition (p) is not merely the result of adding up syntactical terms. A proposition, as a whole, refers to a *meaning*. A proposition is a *concept* which represents an intended meaning to the knowing agent (and of course may have a relation to his/her practice)⁹⁹.

As epistemological discussions are normative, we will understand propositions not only as *concepts* but also as *claims*. The latter are implicit to the propositions and a main characteristic of knowledge. Therefore, propositions are always also *knowledge claims*¹⁰⁰. Hence, knowledge is not only the result of creating concepts with some content, but of creating *concepts with some content intended („claimed“) to be true or useful, or both*.

6.2 Debates within rationalistic epistemology

6.2.1 Internalistic Evidentialism vs. Externalist Reliabilism

Let us return to the main question of rationalistic epistemology: what is the basis of justifying that proposition (p) is a true belief? One stream („evidentialism“) holds that what makes (p) justified is that (p) is „reasonable or rational, from S 's own point of view“ (Steup, 2005, chapter 1.1), i.e. that S justifies (p) by giving reasonable evidence. Another stream („reliabilism“) argues that it is not the evidence itself that justifies belief, but much more the reliability of the sources (or „faculties“) which are used to create the belief. According to this second view, a belief is justified if it „results from a cognitive origin that is reliable“ (Steup, 2005, chapter 2.2).

Another debate revolves around the question, if justification depends on external or internal factors. To most evidentialists, justification of true beliefs is based on *internal* processes like perception, representation, introspection, and/or logical deduction. These activities are internal to the knowing agent, thus justification is independent from external conditions. A presupposition of this view

⁹⁹ Just as in our 3-layer-model (chapter 2.2) of organizational knowledge also here propositions as concepts may appear on three levels.

¹⁰⁰ As a consequence we will use the terms „proposition“, „concept“, and „knowledge claim“ interchangeably.

is that proposition (*p*) as well as its evidence is transparent for internal („mental“) reflection. For instance, if Smith had four cups of coffee this morning, then he might claim:

(*p*) I had four cups of coffee this morning.

According to internalist evidentialism, this proposition is justified if Smith has an accurate representation of (*p*) in his memory which is transparently and consciously accessible via introspection. That would be denied by reliabilists. For them, beliefs are not justified by the fact that enough „luminous“ evidence for it is given, but because it has been created by sources which, under normal circumstances, produce true beliefs. Therefore reliabilism is mostly ascribed to externalism. And even if the sources of justification are internal (e.g. memory), their *reliability* is not (Steup, 2005, chapter 2.3).

6.2.2 Foundationalism vs. Coherentism

Another venue of epistemological discussion deals with the justificatory structure of beliefs and knowledge. The main challenge is how to cope with with an infinite regress which seems to be inherent to justification. This regress goes as follows: to justify a belief, a cognitive agent uses other beliefs. Now, these other beliefs have to be justified, too, if we want the justification to be substantial. Hence, these beliefs again call for further grounding beliefs, and so forth (Bonjour, 1978).

One approach in solving this issue is *foundationalism*. It states that true beliefs are ultimately grounded on principles („basic-beliefs“) which are not further questionable. Different attempts have tried to show how there can (and have to) be such beliefs which are „immediate“ evident. Candidates for such „rock bottom“ beliefs are arithmetical and logical axioms or instantaneous perception. The idea is that these beliefs are directly „cognitive(ly) given“ (Bonjour, 1978, p. 9), thus not have to be separately justified.

Coherentism, on the other hand, denies such a pyramid-like structure and locates justified beliefs in a „web“ of other true beliefs which interdependently sustain a coherent structure (Sosa, 2000).

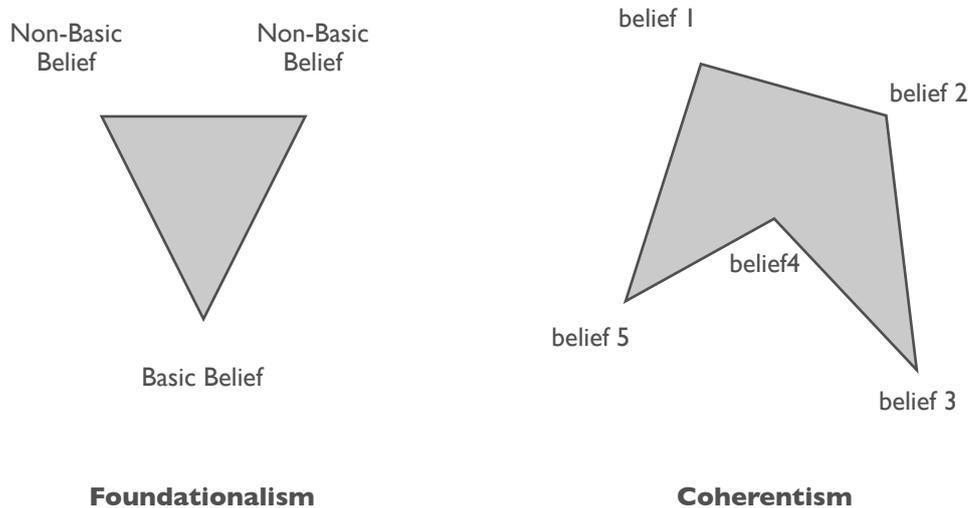


Figure 6.2: Foundationalism vs. Coherentism

6.3 „Gettier problems“: the knowledge gap in rationalistic epistemology

The different debates, shortly outlined in chapter 6.2, aim at providing a stable explanation of how true things can be known and justified. They are based on the presumption that „justified true belief“ is a sufficient criteria, as long as it coherently can be clarified how justification is possible (therefore questions asked are: is justification based on internal or external means? Is justification based on basic beliefs or not?, etc.). Edmund Gettier introduced an argument which seriously questions this general assumption, i.e. the correctness and completeness of the classical definition of knowledge (Gettier, 1963). His argument does not originate from questioning the existence of truth or clear justification (as constructivists or postmodernists would do), but rather reveals the internal inconsistency of knowledge as „justified true belief“. It stresses that the criteria (i), (ii), and (iii) do not guarantee a jointly sufficient definition of knowledge. This is remarkably demonstrated in different cases (in the literature referred to as „Gettier cases“) where even though all three conditions are given it seems difficult imaging that (*S*) actually knows (*p*). Let us recapitulate the

rationalistic epistemological definition of knowledge again and then discuss a “Gettier case”.

First, let us recall the definition provided by rationalistic epistemology:

S knows p if (and only if)

- i. p is true
- ii. S believes that p
- iii. S is justified in believing that p

Now, let us take a look at one well known Gettier scenario:

“Suppose that Smith and Jones have applied for a certain job. And suppose that Smith has strong evidence for the following conjunctive proposition:

d. Jones is the man who will get the job, and Jones has ten coins in his pocket.

Smith's evidence for (d) might be that the president of the company assured him that Jones would in the end be selected, and that he, Smith, had counted the coins in Jones's pocket ten minutes ago. Proposition (d) entails:

e. The man who will get the job has ten coins in his pocket.

Let us suppose that Smith sees the entailment from (d) to (e), and accepts (e) on the grounds of (d), for which he has strong evidence. In this case, Smith is clearly justified in believing that (e) is true.

But imagine, further, that unknown to Smith, he himself, not Jones, will get the job. And, also, unknown to Smith, he himself has ten coins in his pocket. Proposition (e) is then true, though proposition (d), from which Smith inferred (e), is false. In our example, then, all of the following are true: (i) (e) is true, (ii) Smith believes that (e) is true, and (iii) Smith is justified in believing that (e) is true. But it is equally clear that Smith does not know that (e) is true; for (e) is true in virtue of the number of coins in Smith's pocket, while Smith does not know how many coins are in Smith's pocket, and bases his belief in (e) on a count of the coins in Jones's pocket, whom he falsely believes to be the man who will get the job.” (Gettier, 1963, p. 121f.)

What happened? All conditions for „justified true belief“ were given. Also the justification is based on valid grounds: Smith's evidence is supported by empirical adequacy (he counted the coins), trustful testimony (the president of the company), memory, and introspection; his inference is logically accurate (d->e); and the sources of knowledge (observation and testimony) seem to be reli-

able; *and* most important: the final proposition (e) is true. The latter guarantees that we cannot dismiss the case simply in arguing that although justification was accurate, the proposition is not true, i.e. to say condition (i) is not given. It is *given*, and so are (ii) as well as (iii). Nevertheless, it would be somewhat crude to say Smith *knows* the proposition. Many authors have tried to solve or avoid the problem stated by Gettier, mostly by adding some additional criteria in order to bypass such cases¹⁰¹. But what is its origin?

6.4 The origin of Gettier problems 1: open-endedness of context

According to Linda Zagzebski, the Gettier problem is generally “inescapable”: both internalist and externalist theories ultimately fail to solve them (Zagzebski, 1994, p. 65). For internalists, enough internal evidence is given to tick off the proposition (e) as knowledge, although it obviously is not. This is possible, because there are external events which are „inaccessible to the believer” (Zagzebski, 1994, p. 65). In the presented case, these inaccessible events are (1) that unexpectedly Smith gets the job, and (2) that Smith by chance also has got 10 coins in his pocket. Such events are always potentially given and are able to undermine the integrity of any knowledge claim. And as no cognitive agent can ever be certain if given evidence will be sufficient to generally exclude such possible external events, internalists cannot solve Gettier cases. Note that the argument here deviates from most sceptic positions, which usually claim that (at least fully certain) true propositions can never be reached. Contrary to that, Gettier cases presuppose that there in fact is a true proposition, which nevertheless cannot be knowledge. And this seems to be the substantial threat against internalism: that a true proposition which is justified by internal evidence can possibly be no knowledge. There seems to be an unavoidable „gap“ between justification and knowledge (Zagzebski, 1994, p. 65), not only in a *weak sense* (that there may be justifications that turn out to be wrong), but also in a *strong sense*, i.e. that even the most accurate justification of a true proposition in the end not necessarily results in knowledge.

¹⁰¹ See, among others, (Kirkham, 1984; Nozick, 1981, chapter 3).

But not only internalism fails to solve (or avoid) the Gettier problem. Also externalism cannot overcome that issue, although at first sight it may seem to be better suited to do so. Remember that externalists think that justification of a true belief is based on the reliability of the faculties used. Hence, if we were able to show that the means which are at work in our case were not appropriate to that very situation, externalism would successfully block the Gettier case (in negating the justification-condition). This is what is proposed by the externalist position of Alvin Plantinga (Plantinga, 1993). According to his view, reliable faculties like perceptions or inferences have (a) to be „appropriate“ to the „environment“ and (b) to be aimed at serious truth seeking. Would not these additional criteria avoid Gettier cases? Could we then not reject the above case, saying that (a) Smith should not have been trusting the testimony in that situation, or that (b) the inference based on the combination of two independent facts like coins and getting the job, is not seriously aimed at truth, but only a puerility? It may be that adding auxiliary conditions to the knowledge formula reduce the amount of uncertainty for belief-justifications. But there are reasons to believe that no matter how reliable or „appropriate“ the sources or faculties of justifications are, the gap cannot be closed. Zagzebski introduces a case which shows that also externalist strategies in escaping Gettier problems - like that of Plantinga's - are fruitless:

“Suppose Mary has very good eyesight, but it is not perfect. It is good enough to allow her to identify her husband sitting in his usual chair in the living room [...] She had made such an identification in these circumstances many times. Each time her faculties have been working properly and the environment has been properly for the faculties. There is nothing at all unusual about either her faculties or the environment in these cases. Her faculties may not be functioning perfectly, but they are functioning well enough, so that if she goes on to form the belief ‘My husband is sitting in the living room’, that belief has enough warrant to constitute knowledge when true and we can assume that it is almost always true. [...] Suppose Mary simply misidentifies the chair-sitter who is, let us suppose, her husband’s brother. [...] We can now easily emend the case as a Gettier example. Mary’s husband could be sitting on the other side of the room, unseen by her. In that case her belief ‘My husband is sitting in the living room’ is true and has sufficient warrant for knowledge [...], but she does not have knowledge” (Zagzebski, 1994, p. 67f.).

From the position of reliabilist externalism, the given case would fulfill the criteria for faculties of being appropriate to the situation, and of providing the demanded degree of reliability. Platingas criteria (a) for „appropriateness“ of the justification sources are satisfied¹⁰². It also seems that the environment and contextual events of Mary’s case are not somehow unnatural or too fictive, as it may appear in the 10-coins case. Mary is in a situation that plausibly could happen in the „real world“¹⁰³. And finally (b) the cognitive agent infers in a manner that is not suspect of being artificially constructed or somehow not seriously aiming at a useable truth, what also could have been objected against the 10-coins case. Hence, also the externalist position fails to avoid (or generally solve) Gettier problems.

Zagzebski correctly interprets Gettier cases as situations where the link between justification and truth of a belief first can be „broken“ (Mary is justified in that her husband sits in the chair - but: he is not) and then be „regained“ (it turns out that he actually is in the room). There seems to be a constitutive „degree of independence“ between justification and truth, allowing for „luck“ to penetrate every belief-justification (Zagzebski, 1994, p. 69). In fact, Gettier cases are based on a combination of both „bad“ and „good luck“. „Bad“ luck (Mary misidentified her husband; Smith was wrong in believing Jones will get the job) and „good“ luck (unexpectedly Mary’s husband was in the room which turned her claim right; and unexpectedly Smith also had 10 coins in his pocket making his belief true, too) are both involved when Gettier cases arise. The problem for both internalism and externalism is, that cognitive agents never will be able to control the context sufficiently to exclude uncontrollable features like luck. Zagzebski concludes that the source for the inescapability of the Get-

¹⁰² This is not rejected by the fact that Mary’s eyesight is „almost always true“. In contrary, reliabilism incorporates the fact that sources of justification are often not fully reliable and not always necessarily lead to truth. Externalists here are right to say that if this would not be the case, „the component of truth in the analysis of knowledge would be superfluous. Knowledge would simply be warranted belief.“ (Zagzebski, 1994, p. 67). Hence, externalism correctly leaves the gap open - but this is also the reason why it cannot escape the Gettier problem.

¹⁰³ Whereby the circumstances of the 10-coin case seem to be artificially constructed with the only intention to construct a Gettier case (although, of course, it is not unthinkable that this could happen in the real world).

tier problem is the gap between justification and truth which exposes knowledge construction to „epistemic luck“.

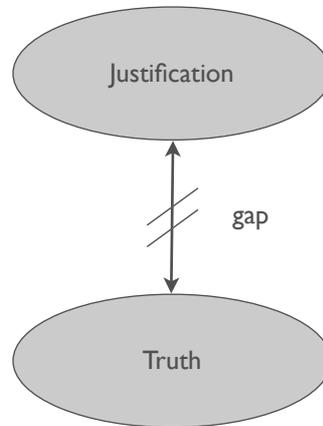


Figure 6.3: The inescapable gap between truth and justification

6.5 “Inescapability” of Gettier problems: consequences and non-consequences

Zagzebski’s analysis of the Gettier phenomenon correctly identifies a major issue in rationalistic epistemology. She introduces arguments and cases which provide strong evidence for the gap between justification and truth staying structurally open - it never can fully be closed. The explanation, for her, is that agents in creating knowledge (i.e. in justifying true beliefs) can never entirely control the creation context. As we saw, in every situation unexpected events may pop up in the „neighborhood of the belief“ (Zagzebski, 1994, p. 70): events which could not be controlled or fully anticipated by the knower. And it is this persisting uncertainty of the circumstances which paves the way for Gettier cases and makes the peculiar combination of „good“ and „bad“ luck possible. The knowledge creation context is open-ended and penetrates creation and justification of rational concepts (i.e. of propositional knowledge claims).



Figure 6.4: open-endedness of context influencing the stability of knowledge concepts

For Zagzebski, one consequence of complexity and open-endedness of the knowledge creation context is the need to incorporate „luck“ into the definition of knowledge:

“So knowledge is true belief + x + luck” (Zagzebski, 1994, p. 72).

Hereby, „ x “ is any definition of justification, be it motivated by internalism, externalism, evidentialism, or any other conceptualization of justification.

Zagzebski’s definition of epistemic luck also appreciates the open-endedness of context and simultaneously frees knowledge creation (as justification) from its too rigid connection with truth. But although she loosens the definition of knowledge (and leaves open how justification could at best be achieved), Zagzebski still preserves its normative notion as justified true belief. This is a noteworthy argumentative move, since her rejection of a too narrow rationalistic-normative epistemology does *not* terminate in relativism. For sure, knowledge claims may always be surprised by unexpected events in the world, as any scientific theory at any time may be falsified by non-expected contradicting observations (Popper, 1959, 2002). But this does not imply to give up the search for useful normative criteria of knowledge creation. Hence, the consequence is *not* to give up the normative drive of the epistemological project. On the contrary: especially when the idea of pure rationalistic knowledge creation collapses, i.e. when it has been recognized that knowledge cannot be defined and reached by compliance with rational criteria alone, we need criteria more than ever¹⁰⁴.

Zagzebski shows that it is possible, if not compulsive, for an epistemological approach to take up the revealed latent uncertainty of the knowledge creation context (in her account: „luck“) *without* giving up the idea of knowledge being directed towards truth and justification. She introduces a viewpoint which connects (1) open-endedness of context and (2) normativity towards truth. But not as a connection which simply adds up two complementing viewpoints. The connection between (1) and (2) insists on their mutual necessity. Zagzebski not only adds „luck“ (open-endedness of context) to „justified true

¹⁰⁴ We will in chapter 7 follow Helen Longino’s reflections on science. There we will see how open-endedness of concepts allow not only for „luck“ but also for social processes to play a crucial part in knowledge creation.

belief“ (the normative definition of knowledge), but presents the former as a condition for the latter. This becomes more clear, if we think about what follows from a position that would exclude open-endedness and latent uncertainty from the knowledge creating context. Within such a position the gap between justification and truth would be closed. This would lead to the peculiar result that justification alone always necessarily leads to truth. In treating any justified belief as being true one not only makes the „component of truth in the analysis of knowledge (...) superfluous“, but would also neglect the fallibility of justified beliefs. And this would be hard to believe, because both from the view of daily life as well as from scientific practice it seems highly problematic to deny the possible fallibility of (even justified) beliefs. From a purely rationalistic epistemological viewpoint the situation is even more pressing, since closing the gap would undermine the very idea of knowledge being normatively directed towards truth. This is why *without* opening the gap (and introducing the open-endedness of context) there can be no normative definition of knowledge. Hence, the idea of justified true belief implies - and depends on - latent uncertainty, complexity, and open-endedness of the knowledge creation context.

6.6 The origin of Gettier problems 2: open-endedness of concepts

We have driven rationalistic epistemology to a point where open-endedness was not only a *tolerable* but a *necessary* factor. But only a factor of the *context* of knowledge creation, not a characteristic of the created *concepts*. Thus, this chapter will try to understand how knowledge claims themselves are, by their very nature, open-ended entities.

For Zagzebski, the source of uncertainty of all knowledge claims (or the gap between „justification and truth“) lies in the unpredictable context of knowing agents. In order to save a normative approach of knowledge she retains the traditional definition of rationalistic epistemology but constrains it to an uncertain context. In other words: clear and well-formed knowledge claims of knowledge-seeking agents are constrained by the messy world the agents unfortunately have to deal with. Zagzebski recognizes external factors and the open-

endedness of the context, but her knowledge agents are fully rational believers capable of accurate construction of unambiguous propositional terms¹⁰⁵. Hence, we should take the possibility into consideration that it is not the context alone which threatens rational justification of knowledge claims. We should rather focus on the knowledge claims themselves, because they probably also contribute to (and not only mirror) the open-endedness of context. To do so, we will analyze the introduced Gettier cases not so much in relation to unexpected elements which pop up in the environment of the agent, but analyze the internal propositional structure and constituents of knowledge claims.

Remember the „10-coins case“, where Smith claims to know (*a*) that Jones (and not he himself) will get the job, as well as (*b*) that Jones has got 10 coins in his pocket. Smith then creates his final proposition by (correctly) inferring: if both (*a*) and (*b*) are true, then „the man who will get the job has ten coins in his pocket.“ (Gettier, 1963, p. 121f.) has to be true, too. As it turns out that Smith will get the job and unexpectedly also has 10 coins in the pocket, his final claim is true even though he not really seems to know it. Just as Zagzebski, most commentators are tempted to trace back the problem to unexpected external factors of the context. The solution then is either to add more rational epistemological principles to control such unexpected contexts, or to accept the open-endedness of context and to reduce the rigidity of the definition of knowledge (which is Zagzebski's approach). Both have in common to narrow their analysis to external factors of the context of knowledge claims. But why not take a closer look at the knowledge claims themselves? How are these propositions structured and interrelated? How do they allow the epistemic gap between justification and truth to emerge? Is it only the messiness of a chaotic and unpredictable context that undermines the otherwise rational knowledge creation agents? Or is there something in the belief-justification process itself that is co-responsible for the inescapability of the gap?

I will argue that the latter is the case because creating knowledge claims in (almost) all cases includes the creation (or utilization) of *generalized concepts*. The meaning of such concepts - like „the man“ or „the room“ - allow a

¹⁰⁵ This, of course, only holds within an objectivistic presumption which implies the delimitable separation of rational subjects from an external independent world.

specific grade of ambiguity and openness which, in my view, constitute the deeper grounding both for Gettier cases as well as for the epistemological gap.

Let us recap the three knowledge claims of Smith in the 10-coin case:

(a) Jones will get the job.

(b) Jones has 10 coins in his pocket.

(p) The man who gets the job has 10 coins in his pocket.

Even if (a) is false - i.e. if not Jones but Smith gets the job - the proposition (p) turns out to be true, because accidentally the man who gets the job (Smith) also has got 10 coins in his pocket. That „unluck-luck“ combination of the context makes (p) surprisingly to be true. And what puzzles us is that we would say Smith not really *knows* (p) although traditional criteria of knowledge (as justified true belief) are fulfilled. We (correctly) tend to say that what Smith *actually wanted to say*, was that „(a) and (b)“ is true. That what Smith *meant* to claim was the proposition:

(*p_{meant}*) Jones will get the job and has 10 coins in the pocket.

If the case would be based on the proposition *p_{meant}* Smith would simply be wrong and articulate a false belief. According to the rationalistic definition of knowledge, Smith would fail to pass the epistemic test and no Gettier problem would arise to challenge analytical philosophers. But unfortunately Smith chooses to create proposition (p) although he may meant (*p_{meant}*) and may see no difference between them with regard to their truth values. For Smith both (p) and (*p_{meant}*) should be false as they seem to refer to the same state of affairs. But this is not the case: (*p_{meant}*) is true and (p) is false, although to Smith both should be false. So what is it that allows (p) in contrast to (*p_{meant}*) to be true? The answer is that (p) is based on the generalized term „the man“, whereas (*p_{meant}*) keeps the particularized term „Jones“:

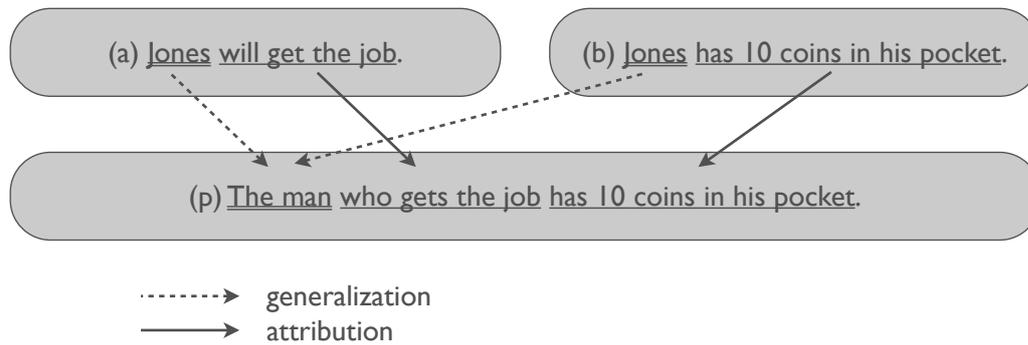


Figure 6.5: Creation of the Gettier case knowledge claim

The creation of (p) is based not only on the conjunction of the attributes (a) and (b), but also on the generalization of the subject of these attributes. Figure 6.5 shows the generalization of Jones from (a) and (b) to „the man“ as dotted lines. This seems to be the main difference to (p_{meant}). In (p_{meant}) „Jones“ is *not* being generalized to „the man“, but transferred in its particularized form:

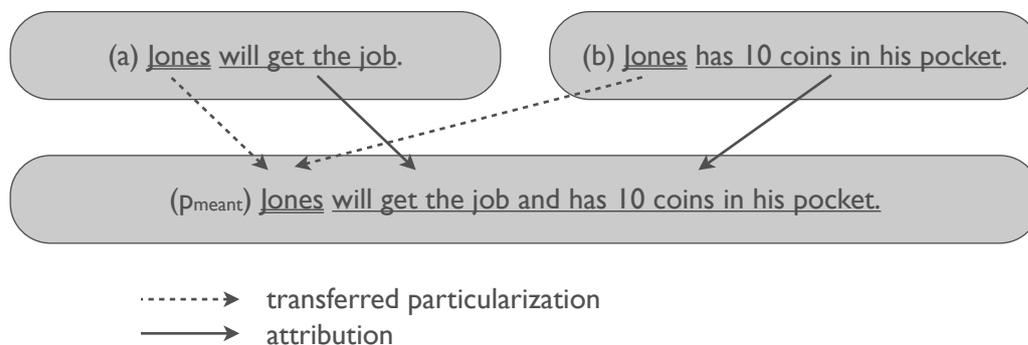


Figure 6.6: Creation of a non-Gettier-case claim

It is that creation of a generic category which opens a space in the meaning of the proposition (p). A space which did not exist in (a) or (b) or in their singular conjunction in (p_{meant}). A space which allows also Smith to be subsumed under the subject of the proposition („the man who gets the job“). This stands in contrast to (p_{meant}), where the term „Jones“ obviously would have been too particular, too narrow, and too distinctive to include „Smith“¹⁰⁶. It is the elasticity of

¹⁰⁶ Although it may be possible to construct another Gettier context around the proposition (p_{meant}), too. For instance, if unknown to Smith a third candidate also named „Jones“ were to get the job, and who were also carrying 10 coins in his pocket.

generalized concepts of knowledge claims like (*p*) which allow unpredictable contexts to cause trouble in the justification of beliefs. Thus, it is not simply the *context* that somehow blurs the clarity of propositions, making them open-ended and allowing Gettier cases to intrude. It is rather the propositions and concepts themselves which provide the conditions for ambiguity and latent plurality. The situation seems similar with our second Gettier case. Here, the proposition

(*q*) My husband is sitting in the living room.

turns out to be true and justified even if she actually meant something like

(*q_{meant}*) My husband is sitting in the living room in the chair in which he usually sits.

The latter of course would not be true if her husband's brother was sitting in that chair. But the proposition (*q*) is true as (accidentally, of course) her husband is sitting somewhere else in the living room. (*q*) runs into the Gettier case and (*q_{meant}*) not, because the latter is somehow *closer* to what she actually meant. (*q_{meant}*) narrows the scope of potential meaning of the claim and its terms (like „Jones“ compared to „the man“). Hence, if (*q_{meant}*) would have been the knowledge claim, then the Gettier case would not have emerged (though one could

probably build another Gettier case with that proposition¹⁰⁷). Akin to the transformative generalization from „Jones“ to „the man“, here „the chair he usually sits“ is transformed to „living room“. Hereby, „living room“ is a term which is more general than the more distinctive term „the chair he usually sits in“ (at least it allows *other* subsumed particularities). This fact allows unpredicted events to turn the proposition true, what in fact happened: the term „living room“ was broad and general enough to incorporate her husband who (accidentally) sits on the other side of the room. Similarly, the proposition „the man who gets the job“ was broad and general enough to incorporate other people than „Jones“ (like e.g. „Smith“).

At this point it is useful to recall what we said about propositions. Namely, that they are not only *knowledge claims*, but also *concepts*, i.e. they refer to a meaning. And reference to a meaning is not always (if ever) unequivocal, because concepts are - to a certain extent - generalizations which subsume particularities¹⁰⁸. Now, there is nothing wrong in creating generalized

¹⁰⁷ In fact, it was Zagzebski's argument that Gettier cases can be constructed for virtually any knowledge claim (Zagzebski, 1994, p. 68). A proposition that would be secured against Gettier cases would have to be constituted by concepts which close the scope of their meaning and refer to an unequivocal entity. In the 10-coins case „Jones“ could have been such a closed concept because it seems to refer to a singular and unique person. But as already mentioned before, we could exploit the fact that the same name can be shared by different people, similar to that more than one person can sit in a living room. One would be tempted to solve the problem in giving more details for „Jones“ (e.g. date and place of birth, relatives) or for „the chair my husband usually sits in“ (e.g. the exact position and relation to other objects in the room). But it seems questionable if we ever would reach a level where a concept could be isolated to one certain, unique and unequivocal meaning. Remember our attempt to create a unequivocal organizational routine like „if the customer IBM calls Andy tomorrow at 12:15, then the time-to-solve of the given problem should not take longer than 15 minutes“ in chapter 3.1.1. There we saw that even this seemingly particular instruction is an organizational concept being open for different interpretations.

This whole issue has been controversially discussed in philosophical literature. Some philosophers argue that there are some „basic“ beliefs which we know immediately and in an unambiguous sense: e.g. beliefs like „I have two hands in front of me“ while looking at my hands (Moore, 1962). Such a view corresponds with the idea that we have undoubtable and unique meanings for things we know by „acquaintance“ (Russell, 1910) as they „appear“ to us in „perception“ (Chisholm, 1964). For these authors, the terms „this man I am pointing at“ or „the chair in front of me“ probably would be capable to form propositions which escape the Gettier problem. But even if there are knowledge claims which refer to purely singular and unequivocal elements, (a) the knowledge claim as a whole still may carry some sort of generalization (we will not follow that here; see (Sellars, 1956) for a detailed discussion), and (b) they would only constitute one part of all possible (and possibly true) knowledge claims (Foley, 1993, p. 190). There will always remain knowledge claims with generalized terms, simply because they are necessary both in science as well as in daily life (and as we saw also in organizations: rules without generalizations are more or less senseless; see, again, chapter 3.1.1).

¹⁰⁸ We have seen this both with *knowledge concepts in general* (in this chapter) as well as with *organizational knowledge concepts* (in chapter 2).

concepts. In fact many (if not most) knowledge claims in daily life are based on generalizations. And what science is all about is to create hypotheses, which essentially is about to generalize observations. But the „price” of a generalized concept is the *potential plurality of its subsumable particulars*. It is that openness, plurality, and potential ambiguity of concepts which allow Gettier cases to emerge and contextual uncertainty (e.g. „luck“) to enter knowledge creation processes. Generalized concepts always transcend - and are underdetermined by - their particulars:

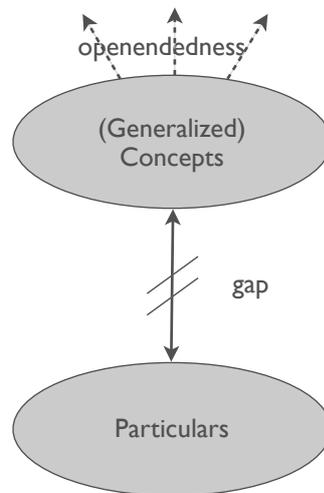


Figure 6.7: the gap between generalized concepts and particulars

Note the turn we made, as well as the contrast to the approaches reviewed above. Instead of stating that an open-ended context allows knowledge propositions to become potentially ambiguous, we argued that - because of the unavoidability of generalized concepts - *knowledge propositions themselves are intrinsically ambiguous*, thereby allowing open-ended contexts to emerge. It is both our world as well as our concepts of the world which are open-ended and dynamic. The „inescapability“ of the Gettier problem shows that also rationalistic epistemology cannot avoid the „open-endedness of concepts“.

To conclude, open-endedness of *concepts* and *context* are bound together; there is not a one-way relation. On one side, we observe a complex world: this is why we need open-ended concepts to deal with it. On the other side, our concepts are open-ended: and this is why our world is, too (since we construct our world using our concepts). It seems not to make sense to choose either of these.

We should rather, from a more holistic viewpoint, make the claim that there is no causal or foundational hierarchy between both: one hand depicts the other¹⁰⁹:

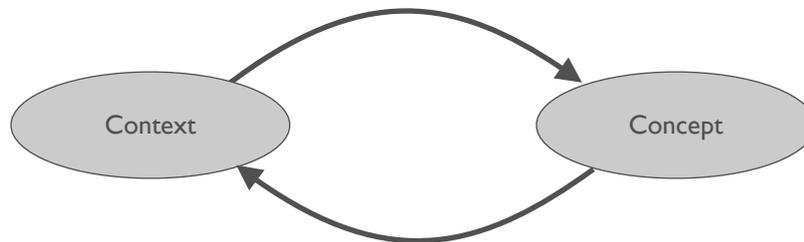


Figure 6.8: Context and concepts as interrelated poles of open-endedness

6.7 Normativity connecting epistemology and science

Rationalistic epistemology is a *normative* project. We can find *epistemic normativity* at all authors discussed above who take knowledge as justified true belief as their point of departure. No matter whether justification is internal or external, is structured as pyramid or network, or is based on evidence or reliability: what epistemological authors strive for is to understand the principles of the path to knowledge via the development of „epistemic norms“ and „cognitive values“ (Longino, 1996). Take, for instance, foundationalism: as it argues for last basic beliefs at the bottom of all knowledge justification, it actually states normative criteria: for (*p*) to be knowledge and not mere belief, it *ought* to be justified ultimately upon basic true beliefs; these basic beliefs *ought* to be, for example, „self-justified“, or „given in appearance“ (Chisholm, 1964). Epistemology is aimed at normative criteria for a distinct concept of knowledge, i.e. knowledge as something opposed to non-knowledge (like, for instance, unjustified belief).

In this light we may better understand why epistemology is intuitively attracted to the field of science. This is because science in its self-conception is directed towards truth and ought to create rather knowledge than non-

¹⁰⁹ This repeats also the dialectical interrelation of our previous notions of epistemology vs. ontology of social fields (chapter 2.1). Note, that we also had a very similar dialectical relation at our previous discussion on organizational knowledge: drawing from Haridimos Tsoukas we identified two interrelated sources of the epistemological gap in organizations: the „nature of context“ and the „nature of knowledge“ (chapter 3.2.2).

Do also note, that this was already prevalent in Kant's constructionism, where it became clear that not only the manifold and chaotic impressions of the world are open-ended but also the categories we use to „synthesize“ those impressions (see chapter 1.3.1).

knowledge. But to do so it needs a distinct concept of knowledge. Now, this distinct concept cannot be systematized by one of the many scientific disciplines themselves. Although scientists may have their own epistemological assumptions, the biologist, while looking through the microscope, will usually not ask general questions like how far perception is an appropriate source of knowledge. A discipline, under normal circumstances, does not coherently examine its own epistemological axioms. These questions are, so to speak, outsourced to meta-disciplines like philosophy of science and epistemology. Therefore, W.O. Quine states: „Epistemology is concerned with the foundation of science“ (Quine, 1969b, p. 69).

In the next chapter we will see how philosophy of science (in its rationalistic form) demand from scientific inquiry to be aligned with epistemic norms like „empirical adequacy“, internal and external „consistency“, the accurate use of instruments and testimony, and logical reasoning (Adams, 2004, p. 228; Longino, 1996). All these rationalistic epistemic „norms“ and criteria are ultimately linked back to general criteria of knowledge from rationalistic epistemology.

But our discussion revealed that the definition of rationalistic knowledge criteria runs into deep trouble when confronted with the complexity of knowledge contexts. The Gettier problem demonstrated that even rationalistic epistemology has to admit knowledge claims being intrinsically plural, thus allowing „non-rational“ factors to enter. One of these supposed „non-rational“ factors is the social context of knowledge creation. Therefore, we will in the next chapter present a „social“ epistemology which tries to extend rationalistic normative criteria of knowledge creation. Put shortly, for social epistemology social factors influencing knowledge creation are not seen only as a biasing and disturbing context which undermines „real“ and „pure“ knowledge creation. In contrary, because rationalistic driven epistemology fails, social epistemology asks if not the *social context*, aims and values of the scientific community may be „validating“ sources of knowledge creation (Longino, 2002, p. 122f.). The questions of such a social epistemology will be: to which extent can the social context bring about knowledge creation instead of merely belief (or content)

creation? To which extent may we be able to reconcile normativity on one side, and open-ended context and concepts on the other? How do we avoid dogmatic rationality on one side and borderless relativism on the other? How could we define normative guidelines not only for abstract (non-existing) rational agents but also for the social environment of knowledge creation? And finally, how could this help us with defining normative guidelines for organizational knowledge creation? These questions will be discussed in the next chapter.

Chapter 7: Social Epistemology

7.1 The rational-social dichotomy

If we take a look at theories of scientific knowledge creation, we can identify a „rational“ and a „social“ approach (Longino, 2002, Chapter 4).

7.1.1 The rational approach

The „rational approach“ is based on rationalistic epistemology as discussed in the previous chapter, i.e. it treats scientific knowledge as an outcome of processes which follow normative-rationalized criteria based on justified true belief. Scientific content has to be true, as well as justified by rules of logic, rational reasoning, and its correspondence with reality. For supporters of the rational approach, the normative foundation of the distinction between scientific knowledge and non-knowledge (or mere scientific content) can be derived from rationalistic epistemology.

Longino suggests three views at (scientific) knowledge: knowledge as (a) content (knowledge *is* something), (b) knowing (knowledge is known by someone), and (c) knowledge-production (knowledge is something that is being created). Applying these views to the rational approach, knowledge (a) is a subset of what is „true“. Furthermore, knowledge is (b) known by individual cognitive agents fulfilling the „justified true belief“ criteria. In science this construction process has to transform *content* (beliefs, ideas, theories) to justified and true *knowledge*. To do so, the rational approach also defines (c) basic criteria of scientific knowledge-production processes like „empirical adequacy“, „logical coherence“, or „simplicity“ (figure 7.1 summarizes the rational approach of knowledge production along these three dimensions of knowledge).

Knowledge as...	The „rational“ approach to scientific knowledge
...content (a)	Content is a subset of what is true ==> <i>monism</i>
... knowing (b)	S knows p if S believes p p (p = true) S is justified in believing p ==> <i>non-relativism</i>
... knowledge-production (c)	to justify true belief • by observation (empirical adequacy) • by reasoning (logical coherence, simplicity, etc.) ==> <i>individualism</i>

Figure 7.1: The „rational“ approach to knowledge, according to (Longino, 2002, p. 77ff.)

7.1.2 The social approach

According to Longino, there on the other hand is a „social approach“ which opposes the rational approach and defines knowledge as something produced and arranged exclusively within social processes. Here, knowledge is not what is true but only what becomes accepted and established in the social context of a scientific community. This view is backed by (social) research which indicates that modern science is far from being a purely „rational“ and „objective“ project. Critical reflections have shown that many scientific practices are biased by ideological, sexist, racists, political, or economical factors (Haraway, 1988; Harding, 2004). Observing scientific knowledge creation in its day-by-day practice shows that for a scientific theory to become accepted (or to prevail against competing theories) is often not regulated by „rational scientific“ criteria, but by external social factors, power relations, or sometimes even pure luck. Similar remarks have been made about technology creation (Pinch & Bijker, 1984)¹¹⁰. The underlying claim is that the transformation from subjective content to objective knowledge cannot be measured by clear epistemic standards or criteria, but is taking place in „an action-based process that unfolds in a controversial manner.“ (Patriotta, 2003, p. 43). Thus, to create knowledge is *not to*

¹¹⁰ See our reflections in chapter 4.3.1.

discover the truth but to prevail in the struggle for acceptance within specific social groups (e.g. a specific scientific community). The creation of accepted knowledge is achieved by „epistemological closure“, i.e. as „(process) by which knowledge is socially legitimized and made durable.“ (Patriotta, 2003, p. 44). For this „social“ approach, rational criteria like justified true belief or truth as an a priori concept of scientific inquiry are non-relevant for understanding scientific knowledge (at least they do not have more legitimization than any other factors which influence knowledge claims becoming accepted). Thus, knowledge ultimately is (a) not what is true but what is accepted; (b) not something that is justified but what a community agrees on; and (c) not something that is produced by individuals according to clear-cut rational rules, but something that is produced in a collective and controversial social process:

Knowledge as...	The „social“ approach to scientific knowledge
...content	Content which is accepted in the community ==> <i>non-monism</i>
...knowing	S knows p if p is accepted in community ==> <i>relativism</i>
...knowledge-production	Social processes, determining how knowledge is accepted in the community ==> <i>non-individualism</i>

Figure 7.2: The „social“ approach to knowledge, according to (Longino, 2002, p. 77ff.)

The social approach, in its most intensive form, has been introduced by sociologists of science and technology. They are driven not by a normative but by a descriptive paradigm. Instead of defining an a priori normative concept of knowledge they focus on the observable, empirical, „real-world“ processes of knowledge production. These processes are not located in individualized cognitive agents, but rather in communities. Knowledge is created in institutions and groups, lead by specific scientific and non-scientific interests, aims, and goals. For the defenders of the social approach, rational or normative criteria have no privileged status because knowledge-production can be determined by any

„processes or practices that succeed in fixing belief or in having some content accepted in some community“ (Longino, 2002, p. 84).

From a rationalistic view, this is of course not acceptable, because the distinction between knowledge and non-knowledge would be entirely substituted by contingent social factors. The rationalistic philosopher would object that the „social“ approach consequently collapses in relativism. And in fact, although the social approach correctly criticizes the philosopher in relying on contrafactual, over-rationalized, and idealized subjects, its flip-side is relativism. Without any normative criteria the social approach can only tell us something about what is empirically observable in scientific communities, which social processes (scientific or not) are involved in knowledge creation, and so forth. This is very similar to our objections against Tsoukas‘ and Patriottas‘ descriptive approaches with regard to organizational knowledge (see chapter 5). And also here, within the field of science, a purely descriptive approach is somewhat unsatisfying not only from the rationalistic philosophers standpoint. Also from a very intuitive standpoint it seems to be problematic that knowledge is nothing else than „belief-fixation“, i.e. nothing else than accepted content:

„there are patterns of belief fixation or content acceptance that have epistemically worthy outcomes and some that do not. Divination, tea-leaf reading, the dictate of civil or religious authority are all methods of belief fixation that under most familiar circumstances issue in systems of representation that are less reliable than those resulting from sense perception or inductive inference. The normative philosopher wants to exclude those from the category of warranting practices.“ (Longino, 2002, p. 79)

7.1.3 Towards a third approach: dissolving the dichotomy

Longino suggests that philosophers are right in doing so but unnecessarily restrict their criteria to rationalized epistemology. Not only *rational*, but also *social* normative criteria are needed to guide knowledge creation processes. In other words, also the social can (and has to) be rational in regard to epistemic effectiveness. To „dissolve“ the dichotomy between rational and social, Longino suggests to embrace the idea of the social construction of knowledge but to overcome its relativistic and merely descriptive stance. Connecting social contextualization of knowledge production (social approach) with epistemological

normativity (rational approach) could turn epistemology into a „normative theory of social knowledge“ (Longino, 2002, p. 122).

But first we will analyze the insufficiencies of a rationalized approach. With these insufficiencies in mind we then will discuss the suggested social epistemological alternative.

7.2 The underdetermination problem: insufficiencies of the rationalized approach

Similarly to our critical reflection upon rationalistic epistemology in chapter 6, Longino reveals an epistemic gap. This gap will turn out to be the reason why in science the creation of knowledge cannot be separated from its social context.

7.2.1 Underdetermination: the epistemic gap at the core of science

Science usually produces *theories* („hypotheses“) which are based and backed by *observations* („evidence“)¹¹¹. In philosophy of science it was early proposed that scientific content (knowledge claims, hypotheses, theories) has to be distinguished from the concrete observations on which that content is based on¹¹². Hereby, the gap between theory and observations introduces a philosophical question. It stems from the fact that science does not only summarize observations but creates hypotheses about causes and connections of these observations. This implies that a theory always contains more than just observations and is not determined by data alone. A scientific theory is not only a bulk of observational data but a hypothetical construction about processes or structures explaining (and being supported by) observational evidence. There is a

„gap between what is present to us and the processes that we suppose to produce the world that is present to us“ (Longino, 2002, p. 125).

The philosopher of science Pierre Duhem first coined that issue the „underdetermination problem“, stating that a theory can never be fully determined (or

¹¹¹ I will not discuss formal sciences like mathematics or logic.

¹¹² The first such explicit distinction was introduced by the „logical empiricists“ (Carnap, 1932; Neurath, 1932; Skirbekk, 1977)

justified) by the data it is based on (Duhem, 1954). The motivation for taking such a view is that theories and hypotheses contain much more than just references to raw data. A theory is embedded in assumptions of how to select and collect data, thereby predetermining scope and characteristics of the theory envisioned. It has to establish connections and correlations between observations, hereby assuming processes or structures in the world which themselves cannot be observed. Generally, the creation of scientific hypotheses and knowledge claims is always embedded in a framework of conditions, standards, and aims of inquiry, as well as in methodological and substantive „background assumptions“. And as these background assumptions guide the creation of theories (as well as interpretation and collection of data), not only data itself determines a theory or knowledge claim.

Duhem's argument for theories being underdetermined by data was that scientists indispensably rely on (material and/or mental) instruments which lie between the world and the theory-creating scientist (Duhem, 1954). For example, the resolution of a microscope (or, say, specific features of a telescope) constitute methodological assumptions which permeate theory building and makes already observation itself „theory-laden“. Other methodological assumptions are, for example, the choice of a specific field method, the specific configuration of experiment settings, and so forth.

Additionally to *methodological* assumptions, there are *substantive* assumptions prevalent, which are based on presumptions about the world. For instance, to conclude that the observed correlation between a specific hormone and a specific human behavior gives evidence of that the specific hormone causes the specific human behavior, is carried by the assumption that hormones causally control central behavioral processes. It excludes the possibility, for instance, of the two observations (hormones and behavior) being epiphenomenal or being causal in the opposite direction (both variations which may also have been supported by the given data). More generally, to trace back observational correlation to a causal relation is itself based on a high-level metaphysical assumption about causality. As Hume or Kant have remarked a long time ago, causality is not an observable phenomena in the world but an assumption of ob-

serving subjects to explain and structure their world (see chapter 1.3). Scientific theories are based on „claims that link the events observed as data with postulated processes and structures“ (Longino, 2002, p. 126). This „link“ cannot be accomplished by data alone, because observations do not link themselves to their underlying processes, which are hypothesized by the scientific theory. Substantive claims like causality are, similar to methodologies, instruments, tools, or mental frameworks, carried into scientific inquiry by scientists and their respective scientific communities. Background assumptions of the knowledge creation context pervade the creation of scientific theories and co-determine how observational data is both fabricated and interpreted.

Besides methodological and substantive assumptions also the *aim* of scientific inquiry already contains assumptions about the world and how it is to be explained. If, for example, a scientific community commits itself to the aim of curing cancer in determining its causes, this already presupposes that cancer exists and that it has a cause; or to aim at knowing the structure of matter, requires to assume that there is matter and that it has a structure (Longino, 2002, p. 176). The existence and importance of aims and background assumptions shows how „questions and tools (...) presuppose (...) a model of the portion of the world being investigated“ (Longino, 2002, p. 188). Aims, standards, substantive and methodological presuppositions are „assumptions that guide inquiry and play a role in the interpretations of data“ (Longino, 2002, p. 176). This also explains the underdetermination issue and why „data alone are consistent with different and conflicting hypotheses and require supplementation“ (Longino, 2002, p. 126). Since theories not only contain protocols about data but also connect data in specific ways, it is possible that different theories explain the same observation.

The supporters of the underdetermination problem explain this gap between theory and observations with the existence of background assumptions which are „supplementing“ data. And just as data, also background assumptions are contingent: the instruments used, the paradigm involved, and the methodologies applied are „chosen“ by the respective scientific community, which explains the possibility of plurality in science:

"in the context of their differing background beliefs and assumptions different aspects of the same state of affairs [become] evidentially significant" (Longino, 1990, p. 47f.)

This does not say that theories cannot be compared or that aims and assumptions are a totally arbitrary choice. It just says that background assumptions are not self-evident or logically necessary: they are open to change¹¹³. Hence, the gap stated by the underdetermination problem is a fundamental one. It cannot be unequivocally or universally closed, since a theory always contains more than the data it is based on.

7.2.2 Underdetermination: the rationalists view

The presented view is challenged by many philosophers who - based on rationalistic epistemology - try to close the gap or to deny its existence. Positivists and other supporters of the „rational approach“ do so by referring to rational reasoning and logic as the missing link between data and hypotheses. Data is then not being supplemented by some contingent background assumptions but by universal and rational norms. According to this objection, scientific inquiry produces correct theories if, and only if, data is acquired and interpreted according to rules of logic and rational „epistemic virtues“, whereby theories would be unequivocally acceptable or reject-able. Data supplemented by logic would be the ultimate indicator of truth. Hence, rational reasoning and empirical correspondence by observations would be sufficient conditions for scientific knowledge. „Rational reasoning“ hereby refers to well-known „epistemic virtues“ like accuracy, simplicity, coherence, explanatory power, and so forth (Goldman, 2003, chapter 8.6; Longino, 1997, chapter 3).

But such a rational approach is not as universal as it claims to be. If we take a closer look at the above „rational“ norms, then it turns out that they themselves are nothing but background assumptions. For instance, the rationalistic norm that a theory has to be as simple as possible is itself a substantive (metaphysical) assumption that the world is simple. And this assumption is, together with all other background assumptions, neither self-evident nor logically

¹¹³ In fact this openness for change of general assumptions is historically important. Scientific revolutions were never based only on new observations, but on a general shift of the „paradigm“ from which a scientific community operates (Kuhn, 1970).

necessary. Traditional epistemic values (i.e. the norms suggested by the „rational approach“) are background assumptions, and as such contingent. This can be shown by cases from scientific practice.

7.2.3 Underdetermination: the scientific practice view

There may, for instance, be situations where defenders of a theory have to decide which epistemic virtue is prioritized against another. A case from molecular biology demonstrates such a prioritization¹¹⁴:

In the 1950s the same phenomena (properties of mitochondrion blood cells) were explained by two diverging theories defended by two different scientific teams. One theory relied on the coherence with existing research, thereby accepting low accuracy in the micrographs of the electron microscope. The other theory was able to show much higher accuracy concerning micro-graphical evidence but was not compatible with existing research. One theory prioritized coherence, one accuracy. But both accuracy and coherence are traditional epistemic virtues, and both theories represented „epistemic respectable positions“ (Longino, 2002, p. 180). However, only the theory with higher coherence prevailed. Being coherent (to other important disciplines) made it accepted in the community despite the fact that its accuracy of results was inferior.

The prioritization of one virtue (coherence) over another (accuracy) was not logically predefined or determined by data, but dependent on many factors like the aims and standards of the epistemic community.

Other cases show that it also is possible to (deliberately) depart scientific inquiry from other assumptions than the traditional ones. It has been observed that feminist driven scientists who based their work on non-traditional virtues like complexity, multi-causality, or pluralism successfully contributed new perspectives and gained epistemically accepted viewpoints (Longino, 2005).

Observing cases from scientific practice and the way how scientific content is produced reveals the relevance of background assumptions. The latter contextualize scientific theories towards a variety of possible (and conflicting) values, norms, virtues, standards, presuppositions, social backgrounds, metaphysical foundations, and so forth. This contextualization makes plurality of scientific theories possible.

¹¹⁴ this case was introduced in (Longino, 2002, p. 179f.)

Helen Longino's „contextualism“ summarizes our hitherto developed view:

„(...) data underdetermine the theories, model, and hypotheses for which they serve as evidence. Theories and hypotheses always overreach available data. More crucially, the content (and language) of data descriptions and of explanatory hypotheses are different. For example, data can consist of correlations while hypotheses assert causal relations among correlated items. Thus, no purely formal relations can be established between them. Evidential relevance of data is secured instead by background assumptions, with the consequence that the same data can in different contexts serve as evidence for different hypotheses.“ (Longino, 1996, p. 39)

7.2.4 Underdetermination: the philosophical view

That the underdetermination problem cannot be solved, i.e. that observation cannot be supplemented by logic (and epistemic virtues) alone, is not only supported by cases from scientific practice. It is grounded in the concept of (scientific) knowledge itself. The origin of underdetermination lies in a „logical“ gap between observations and theory:

„Data (...) do not on their own (...) indicate that for which they can serve as evidence. Hypotheses, on the other hand, are or consist of statements whose content always exceeds that of the statements describing the observational data. There is, thus, a logical gap between data and hypotheses.“ (Longino, 1990, p. 58)

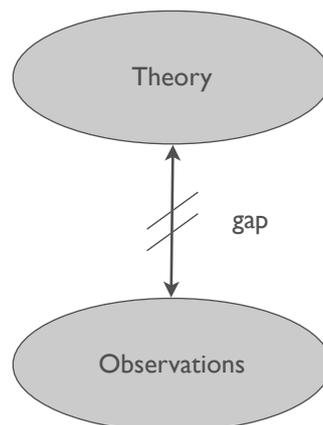


Figure 7.3: The epistemic gap between scientific theory and observations

It remains a general equivocality and ambiguity between concrete observations and generalized theories, no matter how accurate or wellformed a theory may be. This is confirmed by scientific practice but is ultimately grounded in the

open-ended character of knowledge itself. To see this more clearly we may compare (and connect) this discussion about scientific knowledge with the discussion about knowledge in general from chapter 6:

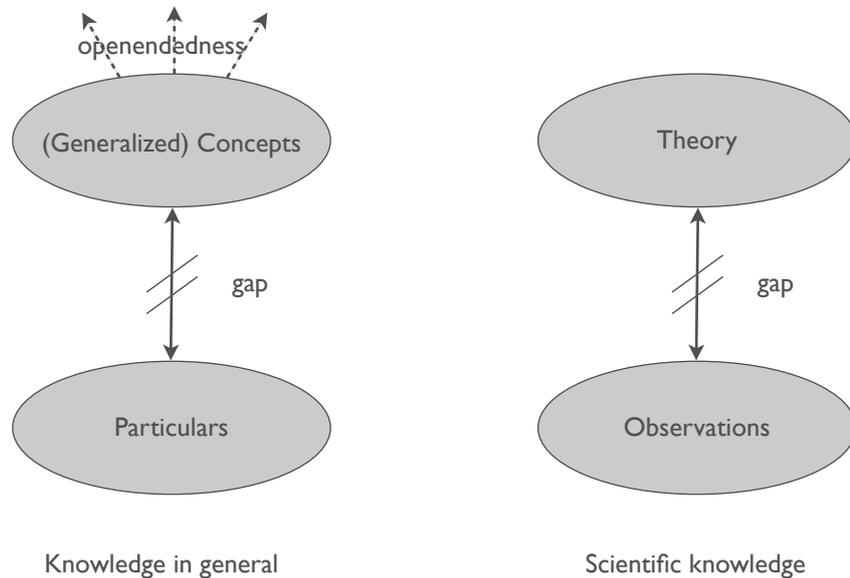


Figure 7.4: The general epistemic gap & the gap at scientific knowledge

In chapter 6.6 we concluded that *knowledge propositions themselves are intrinsically ambiguous* (allowing e.g. Gettier cases to emerge). This flexibility and latent ambiguity of concepts/theories undermine their unequivocal deduction from particulars/observations. Knowledge is open-ended and underdetermined not because an otherwise rational subject has been corrupted by a non-rational social world („context“), but - as we have seen analyzing the Gettier cases - because the constructed knowledge claims themselves are the source of open-endedness and ambiguity. Hence, the gap between theory and observations claimed by underdetermination (figure 7.4, right illustration) is grounded in the gap between knowledge (as generalized concepts) and particulars (figure 7.4, left illustration).

Like in the discussion about general epistemology, this not necessarily has to terminate in epistemic nihilism; it does not entail to give up the search for criteria separating knowledge from non-knowledge. On the contrary, it should motivate us to adapt and enhance traditional rationalistic criteria: „reasoning, logic or observation are not irrelevant, but epistemologically insufficient“ (Longino, 2002, p. 128). And they are insufficient because epistemology has to

define epistemic norms also for the social environment of knowledge production. To get there, Longino suggests to connect the rational with the social approach. Let us first repeat the dichotomy in which both approaches are interlocked: The *social approach* takes underdetermination as reason to *abandon normativity at all*. Its conclusion is that all we can do is to observe and describe the social processes of knowledge creation (and criticize the alleged ideological blindness of the rationalists). From this view, knowledge criteria cannot be philosophically discussed or derived from some idea of knowledge, but are fully contingent to social interaction. The *rational approach*, on the other hand, operates with a *too narrow idea of normativity* which ultimately fails in providing sufficient justifying norms, since it cannot deal with open-endedness and underdetermination. Within the social approach, anything that is generated in social interaction can be knowledge, because no normative justification criteria are available at all. Within the rational approach, knowledge is constricted to non-social criteria only:

„The dichotomizers each propose one kind of principle as either explanatory or justificatory or both. Philosophical dichotomizers propose logic and basic empiricism. Sociological dichotomizers propose social interaction. The former operate as norms, the latter as causal explanation. What each proposes is necessary, but neither is sufficient either as explanation or as justification. Logic and observation alone underdetermine, social interaction alone (where it determines at all) overdetermines.“ (Longino, 2002, p. 139)

As said before, the solution is to integrate both approaches. This can be done by acknowledging that knowledge creation is a justificatory practice guided by normative criteria. And as the social is the ultimate sphere where knowledge creation, confirmation, and acceptance is actually taking place we do need not only universal, a priori rules of rationalistic epistemology, but also social criteria of knowledge creation. The social is epistemologically relevant. It is not only *biasing* rational justification but *enabling* it:

„The social is not a corrupting but a validating element in knowledge.“ (Longino, 2002, p. 122).

But how is scientific knowledge connected to its social context in an epistemologically relevant way?

7.3 „Map making“: community-dependent aims & standards in knowledge creation

How is the social connected to knowledge claims and science? To answer this question, let us compare knowledge creation with the making of a map¹¹⁵.

In his story „Sylvie and Bruno“ Lewis Carroll ironically describes a map with a „scale of a mile to the mile“ (Carroll, 1890). The story tells about the process of map making which is guided by the criterium of accuracy alone. Following that criterium, ultimately the map gained the same size as the terrain it mapped. Although being the most accurate map possible, it loses its ability for being a map at all. Inspired by Carroll, Jorge Luis Borges tells a similar story about a kingdom in which map making was driven by narrow scientific excellence, and where again, in the end, maps had the same size and accuracy of the represented kingdom itself:

„In that empire, the craft of Cartography attained such perfection that the map of a single province covered the space of an entire city, and the map of the empire itself an entire Province. In the course of time, these extensive maps were found somehow wanting, and so the college of cartographers evolved a map of the empire that was of the same scale as the empire and that coincided with it point for point. Less attentive to the study of Cartography, succeeding generations came to judge a map of such magnitude cumbersome, and, not without irreverence, they abandoned it to the rigors of sun and rain. In the western deserts, tattered fragments of the map are still to be found, sheltering an occasional beast or beggar; in the whole nation, no other relic is left of the discipline of Geography.“ (Borges, 1972)

A map is a representation of a part of the world. As such it has of course to correspond („confirm“) to the world as well as it has to be accurate and coherent. But in which ways and in which accuracy it represents the terrain is not only a matter of the world or of the logical rules the map maker follows:

„The map with the best fit is not the one with the greatest possible resolution. Because that would duplicate the terrain being mapped, it would be useless.“ (Longino, 2002, p. 116).

¹¹⁵ Strictly speaking, this is no metaphorical comparison because creating a map *is* a knowledge creation process.

Exclusively relying on criteria like accuracy and correspondence with observations, would possibly lead to the most „accurate“ and „true“ map there can be but nonetheless would be useless; who needs a map with a 1:1 resolution?

Hence, the most accurate map is the most useless. Why? Because the advantage of a map (as well as that of scientific knowledge) stems from the fact that it subsumes concrete particulars under generalized concepts. Maps and scientific laws are both useful because they „do not represent a particular situation, but rather make salient a feature common to a family of similar situations.“ (Longino, 2002, p. 117). Remember our discussion about organizational rules in chapter 3.1: a non-generalized rule would simply be its one and only instance, and as such no rule anymore (at least not a useful one). Similarly, a scientific theory without general claims would consist only of a number of concrete „observation sentences“ and in consequence would cease to explain or predict anything. Loosing generalization is loosing meaning as well as usefulness.

But one feature of generalization is its tension to particulars. And this feature opens the space both for open-endedness of knowledge claims as well as for the underdetermination problem (see again figure 7.4). The consequence for epistemology is that the distinction between knowledge and non-knowledge is not as easy to make as expected. Since knowledge claims (mundane claims, scientific theory, maps, etc.) are in their nature open-ended and transcend the particularities of their instances, clear-cut, a priori criteria (e.g. pure accuracy or pure correspondence with the world) are not sufficient anymore. To make such criteria universal would, at the most, terminate in the 1:1 copy of observations and neglect the possible plurality of scientific theories (and that of different maps). However, this does not mean that maps do not have to be accurate or do not have to conform to the world. It means that the required grade of accuracy and the way in which it has to conform to the world is not determined a priori. *Which* criteria guide the creation of map-making and *how* these criteria are interpreted is not regulated by a universal principle but by the intended *use* of the map:

„How much confirmation, which accuracy and which kind of representation is required, depends on the purpose the representation is designed to serve“ (Longino, 2002, p. 116).

The creation of a map, as well as of a theory, is bound to a *community* with specific aims and purposes in which the map will be used: a map designed for hiking has other properties and a different need of accuracy than that designed for car driving or, say, oil drilling. The criteria of knowledge creation are not determined by a priori principles or raw data, but are also a

„social choice, a matter of goals collectively endorsed in the community conducting inquiry (...) We rate the adequacy of theories and models by their power to *enable us to pursue our endeavors successfully with respect to the domains of which they are representations.*” (Longino, 2002, p. 119, my emphasis)

The conclusion is that criteria for successful (scientific) knowledge creation are not a priori given but depend on *aims and standards endorsed by the respective (scientific) community*. Without scientific knowledge being linked back to its community, theories would be „abandoned to the rigors of sun and rain“.

So far, we have seen that the social context is a crucial sphere of knowledge creation. The social context of a scientific community determines aims, standards, and background assumptions for the knowledge creation process. But a social *epistemology* goes beyond such a merely descriptive observation. It aims at explaining not only that the social is a central element, but also how it may operate as a „validating“ element and how it could determine the separation of knowledge from non-knowledge:

„Like other grounds of knowledge, the social is also a source of error. Thus, to say, that the social aspect of cognitive practices is part of the ground of the distinction between knowledge and opinion is not yet to show how this is so.“ (Longino, 2002, p. 123)

To ask for how the social distinguishes knowledge is to ask the question of normativity. To extend *rationalistic* epistemology with a *social* epistemology we have to develop a normativity for the social context of knowledge creation. This distinguishes a mere *theory of knowledge creation* from an *epistemology*. The latter, turned to its social dimension, requires social norms for social embedded knowledge creation¹¹⁶.

¹¹⁶ This terminology motivated our own terminological distinction between a *theory of organizational knowledge* (which focuses on the „epistemic attributes“ of organizations) and an *organizational epistemology* (which focuses on „epistemological criteria“ for organizational knowledge creation).

7.4 Social norms for knowledge creation

A social epistemology cannot tell us *which* aims and standards a specific scientific community should endorse since this lies in the responsibility of the community itself. Social epistemology rather may illuminate general criteria of social interaction by which a community creates knowledge according to its aims. To do so it is important to understand knowledge creation not only as embedded in a social context but also as a normative project. The latter has been endorsed by *rationalistic epistemology* which aims at defining logical, formal, and universal criteria to distinguish knowledge from non-knowledge. But these knowledge-validating criteria turned out to be problematic when exposed to the underdetermination problem. As a result, *social epistemology* suggests to redefine justification and truth towards a framework which sees *social processes as knowledge-validating processes*. To do so, we have to overcome the individualistic stance of the rationalistic approach. Thus, knowledge creation is not only a logical process within individual, rational agents, but a socially embedded transformation from a subjective (individual) opinion, idea, or information to inter-subjective (collective) knowledge:

„Of course, Galileo and Newton and Darwin and Einstein were individuals of extraordinary intellect, but what made their brilliant ideas *knowledge* were the processes of critical reception. (...) Idea or belief generation is not the same as knowledge production, which involves processes of validation (...)“ (Longino, 2002, p. 122, original emphasis)

It requires more than the formulation of a new idea for something to become knowledge. It requires validation and critical evaluation within a social context in order to transform opinion to knowledge. Hence, individuals *know* only „to the extent they interact critically with others in cognitive communities“ (Longino, 2002, p. 122). Hereby, knowledge has not only to be validated within rational rules of logic, but also within the social context of knowledge creation, i.e. by critical interaction in a community with specific aims and standards.

According to Longino, the key to such a social epistemology is to understand scientific knowledge creation as *critical discursive interaction*:

„Critical discursive interactions are social processes of knowledge production. They determine what gets to remain in the (...) pool of information that counts as knowledge. Thus, a normative account of knowledge must rest on norms governing such interactions. Criticism must be epistemologically effective - by helping a community to avoid falsehood and by helping to bring its accepted content into alignment with its cognitive goals and its cognitive standards. Effective critical interactions transform the subjective into the objective, not by canonizing one subjectivity over others, but by assuring that what is ratified as knowledge has survived criticism from multiple points of view.“
(Longino, 2002, p. 129)

Longino defines four features of such a space of critical discursive interaction (Longino, 2002, p. 128ff.):

- (1) Venues of criticism
- (2) Uptake of criticism
- (3) Public Standards
- (4) Tempered Equality

These four features form the basic enabling conditions of a knowledge creation space in which the transformation of content to knowledge is more likely to succeed. But only if the transformation is guided, i.e. constrained by two social epistemic norms:

- (A) Acceptability and
- (B) Confirmation

First, we will briefly examine the four enabling features of critical discursive interaction (chapter 7.5). Then we will discuss the constraining, main social epistemic norms „acceptability“ and „confirmation“ (chapter 7.6). After that we will focus on the importance of reflection upon those constraining norms (chapter 7.7).

7.5 Enabling: Critical discursive interaction

7.5.1 Venues and uptake of criticism (1st & 2nd feature of critical discursive interaction)

The social context of scientific knowledge production ought to provide space not only for distribution and presentation of new ideas, but also forums for these ideas to be criticized, scrutinized, and discussed. Procedures and mechanism have to be given to make critical interaction as important as new knowledge generation itself. Additionally, response, incorporation, and consideration of criticism has to be an integrative part of any scientific practice. Thinkers like Karl Popper or Thomas Kuhn argued that substantial scientific progress can only be initiated by critical debate and „falsification“ (Kuhn, 1970; Popper, 2002). Without directly referring to critical rationalism (Popper) or the theory of scientific revolutions (Kuhn), also Longino’s account seems to be driven by the idea that knowledge production is never done from a tabula rasa but always emerges out of critical intellectual interaction with existing knowledge claims. Criticism and its uptake are then not only additional activities to „original“ research but a necessary part of it.

Although it may seem obvious that science ought to be driven by open critical discourse, the mentioned conditions cannot be taken for granted in today’s societies. Post-industrial institutions often work against these requirements because of (a) the limitation of space and time, (b) commerce and industrial interests, and (c) due to aiming at only positive results (Longino, 2002, p. 129). This „marginalization of critical discourse“ poses a threat for scientific knowledge creation and undermines open social interaction. Hence, the latter is not seen only as a description of existing knowledge creation environments but as normative criteria for the transformation of something (like beliefs, opinions, theories, content) into knowledge.

7.5.2 Public Standards (3rd feature of critical discursive interaction)

Critical interaction requires not only venues, but also a communicative common ground by which discussion, debate, and dialogue is possible:

„Participants in a dialogue must share some referring terms, some principles of inference, and some values or aims to be served by the shared activity of discursive interaction“ (Longino, 2002, p. 130).

Which content counts as knowledge and which not ought not be determined by the „whim of individuals“ but by public standards to which members of the community are bound (or feel themselves bound). A community’s standards are not arbitrarily given but linked back to the „overall cognitive aims“ and goals of the respective communities (Longino, 2002, p. 130f.). On the other hand, also standards themselves are to be open for critics and transformation (which will be discussed in chapter 7.7).

7.5.3 Tempered Equality (4th feature of critical discursive interaction)

Critical discursive interaction is grounded in the possibility for knowledge to be reflected and created from multiple point of views. Hence, equal intellectual access („intellectual authority“) to knowledge sources and debate is essential. Social position, economic-, or political power must not be driving forces of critical dialogue. All relevant perspectives have to be represented to expose hypotheses to the „broadest range of criticism“ (Longino, 2002, p. 132). All „exclusionary practices“ ought to be avoided, since marginalization of specific groups (e.g. women or members of racial minorities) is „not only a social injustice, but a cognitive failure“; thus, exclusion is both a moral *and* an epistemological problem because it „reduces the critical resources of the community“ (Longino, 2002, p. 132). Therefore, an additional normative criteria is that a community not only accepts or allows, but *actively encourages* and „cultivates“ the emergence of alternative critical perspectives.

Although according to this account, everyone is *invited* to join the critical discourse of a community, one is not *automatically included*. Equality of intellectual authority has to be restricted („tempered“) to the standards and aims of the respective community. As we will see below, compliance to cognitive stan-

dards of a community is part of the acceptance process of knowledge creation. Hence, for a multi-perspective scientific discourse to emerge, standards should not only be *enabling*, i.e. „public“ and generally accessible; they should also be *constraining* in order to keep contributions, knowledge creation, and criticism in scope of the aims of the respective community.

Hitherto, we have followed Longino’s attempt to introduce enabling features of a knowledge creation space, envisioned as „critical discursive interaction“. This has not been a *description* of general features of existing discourses¹¹⁷. It rather is a *prescription* of how successful knowledge creation spaces ought to look like. Thus, on this level Longino’s account is already normative. But how are the presented features justified?

The grounding of critical discursive interaction lies in the two characteristics of knowledge which we have analyzed so far, i.e. (a) open-endedness (and its consequences like Gettier-cases or the underdetermination problem) and (b) normativity (and the quest for a distinctive, non-arbitrary definition of knowledge). Because of (a), the social space of knowledge creation needs to be open and *enabling*: it needs to promote multiple views, provide *transparent* standards, equal access to the field, and so forth. Because of (b), the social space of knowledge creation needs to be normatively guided and *constraining*: it needs to promote critical views, provide transparent *standards*, and restrain („temper“) access to the field. These constraining criteria of a social epistemology will be the topic in our next chapter.

Note that altogether the features of critical discursive interaction work towards a normative distinction of knowledge. Thereby, the location of this distinction is not universal rationality. It is rather located within the social field of knowledge creation. In other words, the social is understood as a field of knowledge validation: not any content ought to become knowledge, but only content which has been exposed to critical interaction. Only after a new theory has been critically evaluated by multiple views, within an environment of equal

¹¹⁷ although there certainly are communities which fulfill many of the presented features (see, for instance, our organizational use-case in chapter 10).

access, a shared and public set of standards, and so forth, the theory has passed a (temporarily successful) transformation from content to knowledge.

What we need to understand now is how a community is connected to critical discursive interaction. How do epistemic actors work towards knowledge that is *accepted* and *confirmed* by their scientific community?

7.6 Constraining: „Acceptability“ and „Confirmation“

As discussed in chapter 6, traditional normative accounts of epistemology are based on the concept of *justified true belief*. Longino retains the notion of justified true belief but extends and opens its meaning towards the social dimension and communitarian character of non-idealized, empirical subjects. Hence, in terms of social epistemology, „content“ (*beliefs*) has to be epistemically „acceptable“ (*justified*) and has to „confirm“ to the aims of the respective community (it has to be *true*) in order to be knowledge. Let us now take a look at the two main substitutions, i.e. that from (1) *justification* to *acceptability* and that from (2) *truth* to *confirmation*.

First, *justification* is substituted by the notion of *acceptability*. For content to be justified it has not simply to follow universal logical rules. It rather has to be epistemically accepted, i.e. it has to comply with the standards and criteria endorsed by the respective community („C“). Content in order to be counted as knowledge has to „satisfy the standards adopted by C“ (Longino, 2002, p. 138) *and* it has to be carried out in a context which meets the conditions of critical discursive interaction. The difference to rational approaches is that acceptability is relativized to the standards of a specific community.

Second, *truth* is substituted by the notion of *confirmation*. Unlike to what „truth“ mostly entails, confirmation requires not a 1:1 correspondence with an objective world. Although confirmation demands from scientific content to be about „objects“, the decision whether a specific content confirms to its intended object(s) or not is not bound to universal truth but contextualized to a community („C“). Thus, content „confirms to its intended object(s)“ if it „sufficiently (...) enables members of C to carry out their projects with respect to that/those objects“ (Longino, 2002, p. 136). In the field of science such „projects“ usually

are experiments or predictions within specific domains (e.g. in empirical physical sciences). But such projects could also be the application to some practical purposes (e.g. in the engineering sciences). No matter what a specific community intends to do with its produced knowledge, confirmation with the world means the application to a community's purposes. It means, that content „A“ *confirms* if „accepting A enables us to carry out our projects in the domain A is about“ (Longino, 2002, p. 137). The „projects“ of a community are of course contingent to the community's (explicitly or implicitly given) aims. The community of molecular physics does different things with its knowledge than computer scientists. A molecular physicist uses specific knowledge claims (e.g. the hypotheses of a specific reaction of a molecule under some specific circumstances) to predict outcomes of specific experiments, carried out with specific devices in specific settings. One aim of that community may be to successfully predict the outcomes of experiments on a molecular level. A computer security scientist, on the other hand, develops new knowledge, for instance, a new encryption algorithm in order to be able to encrypt (and decrypt) data. One aim of that community may be to produce knowledge that successfully can be applied to enhance security within the domain of computer systems. In both cases, knowledge ought to enable the respective community to carry out actions towards its aims.

To conclude, *acceptability* refers to standards of a scientific community, *confirmation* to aims of a scientific community. The two norms constrain knowledge creation (a) to a common language within common standards and critical discussion (*acceptability*), and (b) to common aims, i.e. knowledge should allow a community to „pursue“ its „endeavors successfully“ (*confirmation*).

In Longino's account, acceptability and confirmation are logically bound together because their foundation, i.e. standards and aims, are bound together, too (see figure 7.5). The logical interdependence of aims and standards was one outcome of our previous map analogy: remember that the purpose of the users of the map (the aims of a community) determined which accuracy and which mode of representation should be followed (the standards of a community). In

fact, first there is „a set of cognitive goals, and of practical ends“ which regulate „cognitive endeavours (and) constitutes a cognitive community out of a set of individuals“ (Longino, 2002, p. 145). This set of goals and practical ends then „specify criteria for satisfying these goals, including methodological procedures, tolerable error limits, as well as substantive assumptions about the domains under investigation that must be preserved in any model or theory of them.“ (Longino, 2002, p. 145). Because standards and aims are bound together, also the two norms acceptability and confirmation are jointly inter-related. To conclude, in order to become knowledge, content needs to be *accepted* (it has to comply with standards of the community) and *confirmed* (it has to comply with the aims of a community).

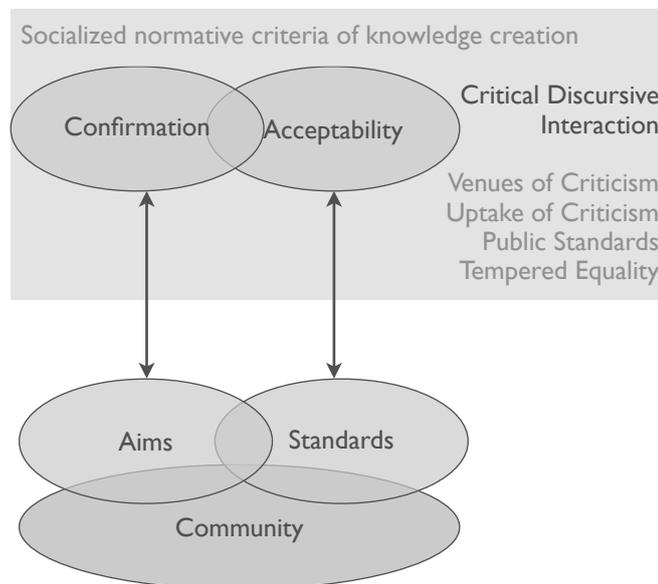


Figure 7.5: Socialized normative criteria of knowledge creation

Acceptability and confirmation are *normatively*¹¹⁸ dependent on their community's aims and standards but also on the principles of critical discursive interaction. A scientific community has to align knowledge creation with its aims (confirmation) and standards (acceptance) and to embed it into a space characterized by venues and uptake of criticism, public standards, and tempered

¹¹⁸ to be „normatively“ dependent means no mechanical determination, but to be in a situation of epistemic responsibility; here, responsibility is the obligation to confirm and accept knowledge aligned towards aims and standards of the community. Of course actors can do otherwise. However, from our normative viewpoint, they „should“ (or „ought“) not. The reason for this is epistemic. It is based on the idea of knowledge as a non-arbitrary (yet open-ended) concept.

equality. In this way knowledge is bound to normative criteria, as well as it is open to plurality and provisionality. It is open, because its substantive and shared standards are contingent to communities and their aims, which can change (see chapter 7.7). It is normative, because knowledge creation (as well as the creation of aims and standards themselves) emerges within social, interactive settings, which are bound to acceptability and confirmation. Hereby, the defined features of critical discursive interaction (criticism, public standards, equality) are the principles and guiding norms which are in general valid for all cognitive communities. This general claim is possible without falling back to substantive metaphysical universality because the presented normative discursive criteria are no *substantive* but *formal* criteria. They do not substantially determine *which* standards and criteria ought to be in place (this is task of the community). They rather guide the *form of social interaction* in which knowledge ought to be created (Longino, 2002, p. 148)¹¹⁹.

The presented non-dichotomized, social epistemological approach connected open-endedness (and underdetermination) of knowledge with normativity. Thus, it may give valuable input for our inquiry. It may provide an *epistemological framework for specifying features of successful knowledge creation environments*. In the last chapters we outlined the main features of such an environment: knowledge creation ought to be embedded in an (1) *enabling* space of critical discursive interaction, and (2) in an *constraining* space of aims and standards „regulat(ing) the discourse in their respective communities“ (Longino, 1997, p. 29). Figure 7.6 illustrates (a simplified version of) this two-fold process of enabling and constraining:

¹¹⁹ For the crucial difference between substance and form, as well as its meaning for the discussions about relativism, constructivism, and postmodernism see (Seirafi, 2007, 2010).

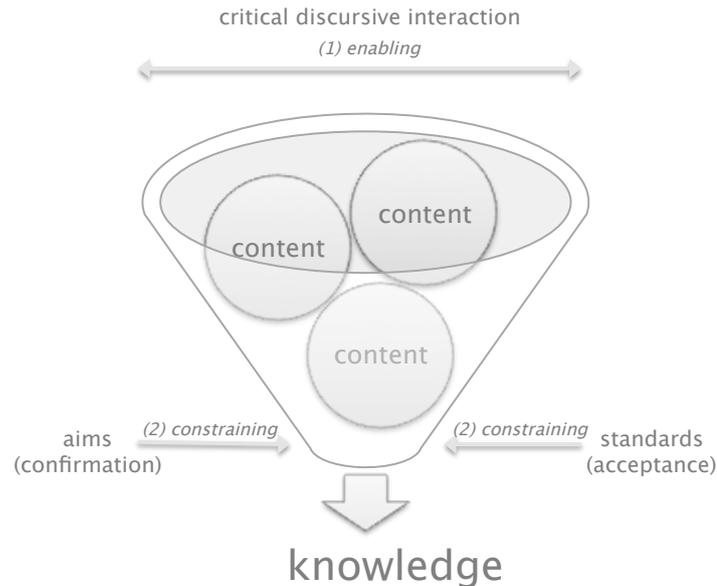


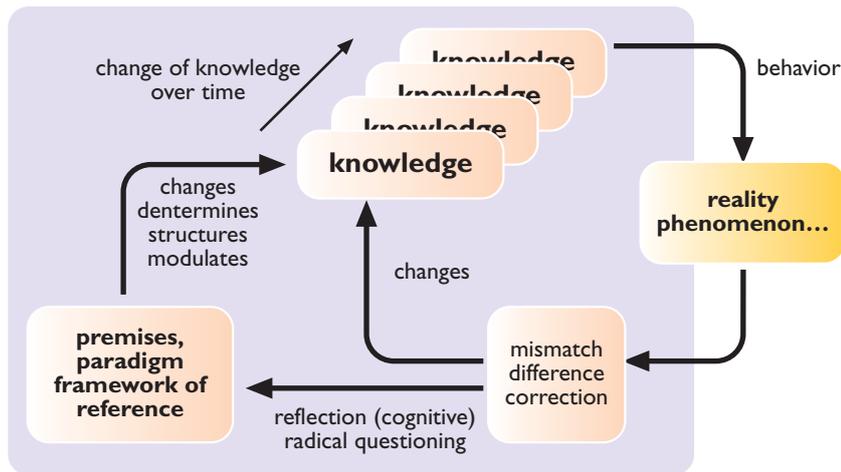
Figure 7.6: Enabling and constraining the knowledge creation environment according to social epistemology

7.7 Reflecting: double looped knowledge creation

As already mentioned, not only produced knowledge but also involved aims and standards have a provisional character and are open to change. Hence, also the reconciliation of a community's aims and standards is a knowledge creation process and therefore subject to epistemological reflection.

We may distinguish between two levels of knowledge creation. First, there is „common“ knowledge creation, i.e. the venue of knowledge creation within a community's aims and standards. On the other hand, there is a second level which is about the creation (or redesign) of the aims and standards themselves. And as history of science shows, it is the shifts and reconstructions of the fundamental groundings and assumptions of a scientific discipline (i.e. changes at the second level) leading to major and most substantive progress.

To distinguish these two levels of discourse, constructivist inspired theories about knowledge and learning have distinguished two „loops“ of knowledge creation. As already discussed in chapter 4.2, single loop learning happens *within* a paradigm whereby a second loop learning changes the paradigm itself (Argyris & Schön, 1978). These ideas from theories of (organizational) learning can be adapted to any knowledge creation activity (Peschl, 2007):



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Figure 7.7: Single and double loop knowledge creation (Peschl, 2007, p. 120)

As also already outlined in chapter 4.2, the model of double-loop learning correlates with ideas from philosophy science, where, for instance, Thomas Kuhn makes the distinction between „puzzle solving“ and „paradigm shifts“ (Kuhn, 1970; Peschl, 2003, p. 120). Thus, a holistic social epistemology has to emphasize the fact that also background assumptions, standards, and aims (and not only single knowledge claims and hypotheses) are open to contingency and change.

From our social epistemological viewpoint, we deal with two knowledge creation discourses (figure 7.8). At a first-order discourse the knowledge creation process is about confirmation and acceptability of knowledge claims. This first-order discourse is bound to aims and standards of the respective community and to the formal requirements of critical discursive interaction. But of course also these aims and standards are to be open to change and development. Hence, scientific (and in consequence also organizational) communities ought to scrutinize, modify, and (re-)create their second-order level of knowledge, too.

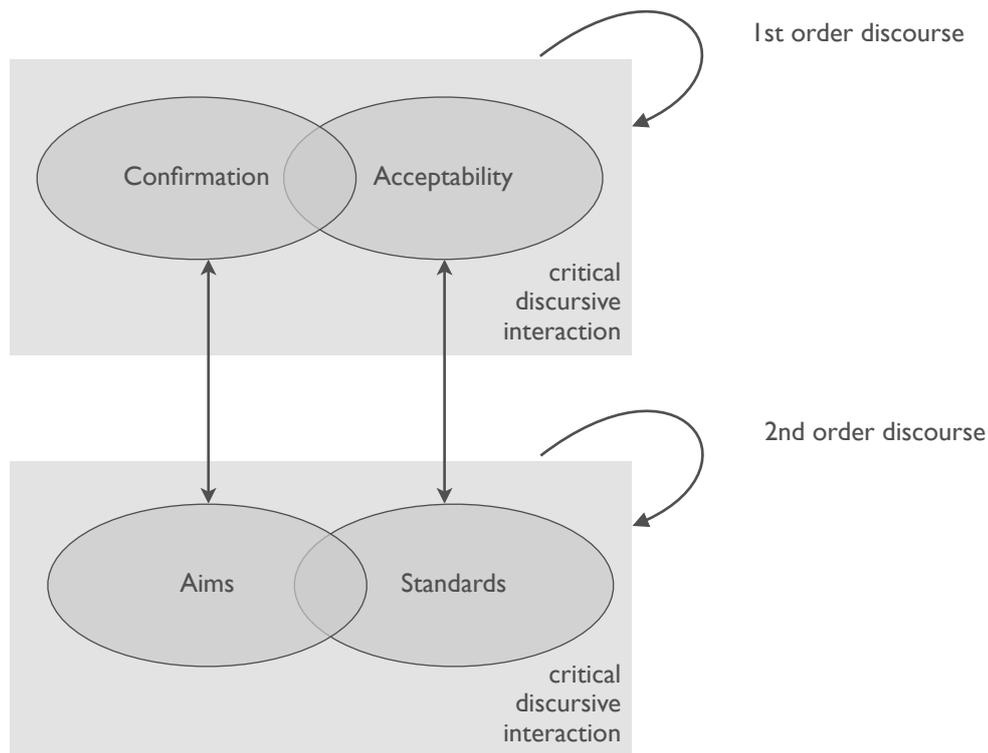


Figure 7.8: First and second order discourse from a social epistemological viewpoint

Also this second level ought to be bound to normative criteria of critical discursive interaction (Longino, 2002, p. 136f.)¹²⁰. Longino concludes that any scientific community should be aware of (and reflective upon) its deeper and more fundamental level of background assumptions, ontological commitments, standards, and aims. A proper knowledge creation environment should provide critical discursive interaction, not only for its stock of knowledge, but also for the (re-)construction of its aims and standards (Longino, 2002, p. 134f.).

This third normative implication of „reflection“ completes our view on a social epistemology. Hence, in our developed terms, we may conclude the three

¹²⁰ Otherwise, our account of social epistemology would leave this important second level of knowledge creation without any normativity. From a critical point of view, one then could object that if we fail in providing normative criteria for that second level, we ultimately would be exposed to relativism. This is because we grounded our normative criteria on elements (aims and standards) which were themselves *not* bound to any norms. Hence, the argument would conclude, in the end there is no rock bottom on which the whole approach lies upon.

In fact, we do not have clearly defined aims and standards while evaluating aims and standards, but this does not mean that there are absolutely no general guiding aims or standards available (we will deal with this in chapter 9.5). Furthermore, the normative criteria of discursive interaction are *formal* criteria for any knowledge creation environment and not fully dependent on underlying aims and standards (we will also explicate that argument in chapter 9.5).

norms (1) enabling, (2) constraining and (3) reflecting¹²¹ in following graphical summary:

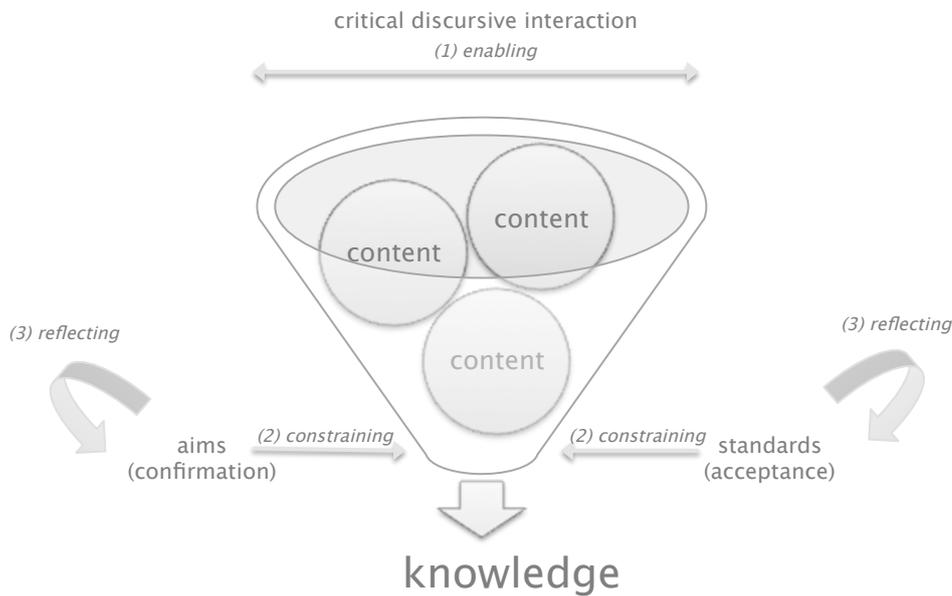


Figure 7.9: Core norms of social epistemology: enabling, constraining, and reflecting

7.8 Excursus: local & general epistemology

Before summarizing this chapter, let us shortly locate social epistemology within the philosophical discourse.

According to Longino, social epistemology represents a general epistemology. It is a topic of philosophy and covers the hitherto mentioned general conditions of knowledge (like critical discursive interaction as well as the pair of acceptability and confirmation). But it does not discuss concrete epistemological criteria which are in place in scientific practice (unless in examples and use-cases). These are in the hands of the concrete local communities. Longino proposes a kind of division of labor: on one hand, specific aims and standards are to be (re-)defined in the respective communities (e.g. molecular physics or computer science). On the other hand, general epistemological conditions - like, for instance, critical discursive interaction or knowledge as justified true belief - are topics of philosophy. Both types of reflection and knowledge creation are

¹²¹ These three terms are not used by Longino. They are our own expression and systematization of her social epistemology. A systematization which we are going to reuse in the shift to organizations in chapter 9.

subject to criticism and change, whereas one type is „local“, as the other is „general“.

Note the circular characteristic of „general“ philosophical epistemology, i.e. that the creation of general criteria of knowledge is itself subject to these criteria. Strictly speaking, to change a general knowledge condition, like e.g. acceptability, that very condition has to be in place. In its most paradox implication, the refutation of a general concept is only possible on basis of that general concept: for instance, the refutation of acceptability has itself to be accepted. This „performative self-contradiction“ is a classical problem of philosophical reflection. Authors like Karl-Otto Apel or Jürgen Habermas have referred to it as a reason why some very general concepts of knowledge and communication *cannot be subject to any contingency* but are fixed and possess necessary truth (Apel, 1988; Habermas, 1984). A general concept is „ultimately justified“¹²², the argument goes, if an opponent who disagrees to it must hereby necessarily rely on it¹²³.

Longino, on the other hand, suggests a more modest approach: philosophy and (social) epistemology discuss the possible *meanings* of general concepts like knowledge, its social nature, its criteria, and so forth. The grounding of this discussion is not some ultimate, un-disagreeable ground, but a „shared sense of what knowledge is“ (Longino, 2002, p. 174). As such, epistemology is similar to any other scientific endeavor and open to criticism and change, even with regard to its basic concepts, standards, and aims¹²⁴.

What distinguishes general epistemology from local epistemology is the larger scope of the former: general epistemology discusses knowledge as a meaningful concept, local epistemologies discuss what counts as knowledge within their own specific fields:

¹²² authors translation; original quote: „letztbegründet“

¹²³ E.g. the law of the excluded middle: Apel or Habermas would say that to refute this law one would have to apply it. Hence, to them, it is „ultimate“ (or „transcendental“) because it is necessarily at the bottom of any knowledge claim.

¹²⁴ Longino's criteria of critical discursive interaction are themselves partly based on Habermas' notion of „communicative action“. Especially the conditions of tempered equality and open critical dialogue is related to Habermas „consensus theory“. However, the difference lies in the fact that Longino's introduced norms are criteria for „legitimate consensus“ rather than criteria for „truth“ (Longino, 2002, p. 131).

„The argument I have offered (...) depends on an analysis of the relation between cognitive aspirations and cognitive resources and on an intuitive distinction between knowledge and opinion that I take to be shared. To the extent the intuition is shared and correctly articulated in the conditions, the analysis specifies in normative terms the meaning of a normative concept. Those who reject the conditions have a different concept of knowledge, or perhaps, a concept of something else. So, there is a sense in which even the general conditions are local, just less local than particular norms adopted in particular communities in conformity with the general conditions.“ (Longino, 2002, p. 174)

7.9 Summary: social epistemology bridging the dichotomy between rational and social

The interconnected notions of *acceptability* and *confirmation* relativize knowledge to communities. But unlike common relativism, the contextualization to communities is not fully arbitrary because it is guided by critical discursive interaction. This connects the notion of knowledge with social dynamics without rejecting the traditional normative definition of justified true belief. The latter is rather reformulated to *accepted confirmed content*. Equipped with the normative criteria described above, the presented social epistemological account is neither skeptical nor relativistic. Compared to the two dichotomized ends of „rational“ and „social“ approaches, the introduced approach has crucial advantages: as the *rational approach* is non-relativistic at the price of being non-socialized („individualistic“), and as the *social approach* is socialized and pluralistic at the price of relativism, Longino’s „non-dichotomizers way“ claims to be socialized *and* non-relativistic:

Knowledge as...	Rational approach („Philosopher“)	Social approach („Sociologist“)	„The Non-dichotomizers way“
Knowing	Non-Relativism	Relativism	Non-Relativism
Knowledge-production	Individualism	Non-Individualism	Non-Individualism
Content	Monism	Non-Monism	Non-Monism

Figure 7.10: Different approaches to „knowledge“, according to (Longino, 2002, p. 77ff.)

Longino's account contextualizes knowledge creation to its social embeddedness without losing a core idea of western epistemology, which is normativity. This avoids the relativistic trap of social approaches:

„These definitions do relativize the various concepts of knowledge to communities, but those communities must themselves satisfy certain conditions in order that the cognitive activities occurring within them qualify as knowledge or as knowledge-producing. (...) (F)rom a non-dichotomizing perspective that accepts plurality and provisionality as features of the knowledge of empirical subjects, contextuality *is* the nonrelativist position“ (Longino, 2002, p. 138)

To conclude, social epistemology - as outlined in this part of our inquiry - provides normative criteria for the social context of knowledge production¹²⁵. This distinguishes it from the „social approach“ mentioned above which abandons normative criteria in favor of the social context. But social epistemology also is distinguished from the „rational approach“ which abandons the social context in favor of normative criteria. Therefore, Longino does neither fully agree to the descriptive-empirical project (the social approach), nor to the rationalistic epistemological project (rational approach). Her social epistemology rather tries to connect normativity from the rational approach with the social stance of the social approach.

7.10 The shift to non-scientific contexts

7.10.1 „Every group is among other things a cognitive community“

Longino's reflections clearly revolve around *scientific* knowledge. This is confirmed by the examples introduced which - almost without exception - illustrate use-cases from science. But this does not imply that the outlined social epistemology is solely restricted to scientific knowledge:

„The concept of epistemic acceptability and that of confirmation (...) can be brought together to provide definitions of knowledge in each of the senses of knowledge distinguished (KS: as „knowing“, i.e. as belief, as „knowledge production“, i.e. as justification, and as „content“, i.e. as truth). One can think of these definitions as applying only

¹²⁵ Henceforth, „social epistemology“ will be used in a narrow sense, i.e. it will refer to the outlined approach of Helen Longino. In its broader sense, „social epistemology“ subsumes different philosophical approaches which try to take the social context of knowledge creation into account (Fuller, 1996; Goldman, 2009).

to scientific knowledge, if one takes the restrictive view of the arguments for sociality, or as applicable to knowledge generally, if one takes the unrestricted view of those arguments.“ (Longino, 2002, p. 136)

Is it legitimate to take the „unrestricted“ view? It is, if we generally understand communities also as *knowledge communities*. Everything said in our previous remarks about social epistemology is generally applicable to any community that is explicitly or implicitly involved in knowledge creation and application. Science appears as the main addressee of (social) epistemology, only because from all social fields it is the one, which is most explicitly dedicated to knowledge creation. It is the field which directly is organized towards the production of knowledge as its main purpose. But professionalized scientific communities have no „monopoly“ on knowledge production (Luhmann, 1995, p. 30). Science is not the only field in which communities are devoted to the creation and application of knowledge. In contrary, it seems that any organized group of people is constituted by knowledge producers and/or users:

„Given that every group organized for some purpose, where for governance or self-governance (from nation to village), mutual protection, production of goods, exchange of goods, provision of services, the expression of religious devotion, the appreciation of beauty, or the advancement of learning, must base its activities in representations of its universe of action, *every group or society is among other things a cognitive community*.“ (Longino, 2002, p. 146, my emphasis)

Science is the community which is directly committed to the production of knowledge as its central aim. But it is only the top of the iceberg, since knowledge creation and application are issues for any „group organized for some purpose“. And our hitherto outlined epistemological reflections about the idea and (normative) criteria of knowledge, critical discursive interaction, acceptability, or confirmation, are *philosophical* reflections on a very fundamental level. The concepts both of rationalistic and social epistemology are too general to restrict them only to science. Social epistemology understands knowledge creation as dependent on socialized aims and standards of a community. This is why it ought to be theoretically relevant for non-scientific communities as well:

„Some communities are more narrowly focused on knowledge production, whereas others use knowledge as a tool or instrument for the satisfaction of practical ends. I am assuming that even those groups least actively engaged in the production of knowledge

required for the realization of their ends nevertheless adhere to a set of standards determining what will count as knowledge for them.“ (Longino, 2002, p. 146)

Social epistemology is not restricted to communities that are „narrowly focused on knowledge production“ but open for any community that uses knowledge as „a tool or instrument for the satisfaction of practical ends“. Of course, if we compare knowledge in organizations (or engineering sciences) to „pure“ scientific communities, then there is a difference: the justification process of non-scientific knowledge is mostly bound to *practical* validation. Hence, if organizational (or any other „applicable“) knowledge fails to comply with social normative criteria, this „becomes apparent in the frustration of action based on that purported knowledge“ (Longino, 2002, p. 146), i.e. applied knowledge is constrained to successful action. But is this not also the case for „pure“ scientific knowledge? Our claim will be that there is no substantial divergence between a community that uses knowledge to, for instance, accomplish specific experiments and a community which, for instance, uses knowledge to accomplish specific tasks in organizations. False knowledge in physics may lead to unsuccessful predictions in experiments, just as false knowledge in organizations may lead to unsuccessful actions (or also simply to wrong predictions e.g. in foresight analysis). In our social epistemological view all these activities are subsumed under aims and standards of a community, hence integrated into the normative criteria of acceptability, confirmation, and critical discursive interaction.

7.10.2 The shift to organizations

Social epistemology began with the finding that underdetermination of theory can only be understood when taking aims and background assumptions of a community into consideration. This is why acceptance and confirmation of knowledge were bound to aims, standards, and background assumptions of the respective scientific community. This then lead to the conclusion that „we rate the adequacy of theories and models by their power to enable us to pursue our endeavors successfully“ (Longino, 2002, p. 119). Therefore, social epistemology may be relevant for knowledge creation of *any* community which „success-

ful endeavors“ are dependent on knowledge. We saw this already within science itself: there are scientific communities whose knowledge validation processes demand successful predictions of outcomes within experimental settings (e.g. molecular chemistry), whereby other disciplines demand successful practical application (e.g. engineering sciences). Similarly, non-scientific communities like formal organizations depend on organizational knowledge to successfully carry out their actions.

For an open, „nonrestricted“ social epistemology the differences between formal sciences, engineering sciences, and organizations, are only gradual. As they all are dependent on knowledge to „pursue their endeavors successfully“, they all are sensitive to epistemological reflection. There is no reason why norms of knowledge creation should not be applicable to organizations. But to do so, we need to understand the organization as a knowledge community with an epistemological issue in its core. In part I we have already mentioned that organizations are based on knowledge and that problems of organizations should also be tackled as epistemological problems. What is needed now is to interconnect the knowledge-based view on organizations, as developed in part I, with social epistemology, as presented in part II. This will help us to move from a theory of knowledge in organizations to an organizational epistemology.

Part III - ORGANIZATIONAL EPISTEMOLOGY

Chapter 8: The normative issue at organizational knowledge

8.1 Knowledge as cornerstone of organizational practice

In Part I we analyzed the organization as a social field which epistemic and ontological distinctions correlate to a certain extent. According to our analysis, knowledge is not only a cognitive *epistemic* state or content of individuals but also ontologically manifested in different levels of the organization: knowledge appears as objective *representations* in files, computer systems, or brains, as inter-subjective *meaning*, and finally as a relation to the *practice* of the organization. Hence, organizational knowledge is not only *epistemically* but also *ontologically* significant.

Subsequently, we defined knowledge as a circular organizational concept which both creates the organization, and is being created by the organization. In this „strong sense“, organizational knowledge is composed of concepts which allow organizations and their actors to draw distinctions in order to understand the world as well as to act in it. Corresponding to the triadic structure of representation, meaning, and practice, different types of knowledge were identified at different levels. For instance, „propositional“ knowledge is manifest more on the representational level, whereby „narrative“ knowledge is situated deeper on the level of daily practice. Propositional knowledge is ultimately structured as discrete instructional form („if-then“), encoded into instructions, routines, handbooks, and so forth. Narrative knowledge is structured more as an analogy („as-if“) and encoded into stories, best practices, and so forth. Of course, propositional knowledge is to be translated to practice in order to become significant. And also narrative knowledge can be translated to explicit representational form, for instance, in order to become more accessible.

8.2 The epistemic gap and underdetermination at the core of the organization

Despite their differences, both types (propositional and narrative knowledge) turned out to be forms of organizational knowledge. And they both have in

common to be *claims towards the organizational practice*. They are created - no matter if deliberately or more implicitly - in order to be applied to a potential diversity of cases within a heterogenous organizational reality. In chapters 3 and 4 we explored creation and application of knowledge and learned that knowledge and practice do not simply overlap but - to a certain extent - stand in opposition. Of course, knowledge emerges out of organizational practice (namely, when problems and perturbations occur). But this does not imply that knowledge *is* practice. Thus, organizational knowledge is not the same as practice, it is rather (fundamentally) related to practice. This is an important distinction since knowledge is always - in varying degrees - abstracted and generalized from what it is about¹²⁶. To conclude: knowledge permeates the subjective and inter-subjective world of organizational actors, but there permanently remains a gap between knowledge and its object. Let us take a look at this gap and its relevance to organizations.

The philosopher Steve Fuller identifies two different epistemological traditions. He distinguishes between knowledge as spatio-temporal content (which he calls „materialism“) and knowledge as abstract entity (which he calls „platonism“) (Fuller, 1996)¹²⁷. One sees knowledge as a spirit-like, transcendent, and non-empirical concept, the other as an embedded, material, and empirical (arte)fact. In knowledge management literature this dichotomy has been discussed as „cognitive“ versus „embodied“ approaches (Patriotta, 2003, chapter 2), as „explicit“ versus „implicit“ knowledge (Nonaka & Takeuchi, 1995, chapter 3; Nonaka, et al., 2008, chapters 1 & 2), or as „propositional“ versus „narrative“ knowledge (Tsoukas, 2005a). The differentiation and dichotomy between „rational“ and „social“ approaches has also been present at many locations in our inquiry so far, like at the discussions about organizational structure (chapter 1.2), at organizational knowledge (chapters 2, 3, 4), as well as at epistemology (part II). Now, some knowledge management authors (as we saw in part I) have been criticizing the traditional („platonistic“) view of knowledge as a „view

¹²⁶ Which makes possible Gettier cases (chapter 6) as well as the underdetermination problem (chapter 7).

¹²⁷ see also (Fuller, 2002, 2006)

from nowhere“ and as too abstract for coping with the complex environment of organizations. This is why Nonaka & Takeuchi extend their view to „implicit“ knowledge, why Tsoukas introduced „narrative“ knowledge, and why Patriotta included „embodied“ approaches in his analysis. The overall message is that organizational knowledge cannot be isolated from concrete organizational action. Knowledge and action („practice“) are inevitably bound together and interrelated.

But this should not conceal the inner structure of knowledge, which ultimately is based on transcendence, abstraction, and generality. It should not conceal the fact that knowledge is always directed towards something which is not that knowledge itself. It is always structured as a *referential relation* between knowledge (as a claim) and its subsumed particularities. For instance, the knowledge claim that „water boils at 100°C“ refers to entities (or processes) outside the knowledge claim itself. It refers to all potential particular entities of „water“. The knowledge claim subsumes specific particularities - in this case all potential occurrences of „water“ - and predicts specific behavior (that is boils as 100°C).

The gap between a knowledge claim and the specific particularities it refers to is inescapable. Not only because hypotheses derived out of the empirical world can never fully be verified („induction problem“), but also because theories cannot be unequivocally determined by data („underdetermination problem“). Both problems are rooted in the potential open-endedness and ambiguity of knowledge. Knowledge claims as generalized concepts cannot cover (or anticipate) all its possible particularities. And this is the case for organizational knowledge, too. If an actor creates new organizational knowledge (e.g. a new proposition, routine, narrative, best practice, etc.) then there are certain degrees of freedom in doing so. There is not a definitive „best“ solution which „fits“ best to the given practice. There are of course „working“ solutions, but with no lifetime guarantee: just as in scientific knowledge, also organizational knowledge always faces possible falsification. Since there is no unequivocal connection from practice to knowledge, also organizational knowledge is exposed to the underdetermination problem: new organizational knowledge claims are not

entirely determined by the practice it is related to, just like (as we saw in chapter 7) new scientific knowledge is not entirely determined by the particular data it refers to.

If we want to understand this epistemic gap at organizations, then we have to repeat one of our assumptions, i.e. that knowledge is rather a relation than a self-sufficient entity. That if knowledge would not point to something external, it would only point to itself. It would be exclusively self-referential. And although self-referring knowledge claims are possible (and may be very interesting for philosophers; e.g. the claim „This sentence is not true.“), in most cases knowledge refers to something other than itself, i.e. to its particularities¹²⁸. Note that the ability to be true or false at all requires a certain distance between knowledge and its particulars, between the claim and its field of reference, between theory and observation, between organizational knowledge and organizational practice. Knowledge is characterized by - to use the phenomenological term - „intentionality“, i.e. knowledge is always knowledge about something.

This is the case even for implicit, processual knowledge which as „know-how“ has been distinguished from „know-that“ (Ryle, 1949). Knowing-how „to ride a bike“ is a claim towards all situations of bike riding. It claims that in these situations the actor is able to ride a bike, instead of, for example, falling from the bike, or instead of riding on something else. Also „tacit“ knowledge is structured as validity claim and hence stands against particular situations or events. If we count competencies, abilities, or skills as knowledge we have to permit some degree of generality and transcendence. „Bike-riding“ as know-how is an implicit knowledge claim which says that its actor is basically able to ride *any* (at least a - for that actor - usual) bike. Hence, we can (conceptually) differentiate between implicit knowledge (the skill or competency) and the real world occurrences of its application¹²⁹. The former is a generalized concept (bike-riding) standing against the latter as its particulars (all the possible spatio-temporal events where riding a bike is possible). And even if I restrict („context-

¹²⁸ This is true even for self-referential claims, because we cannot understand such a claim without saying something like that „it points to *itself*“, i.e. without (at least syntactically) separating the knowledge claim from what it refers to.

¹²⁹ Although the way in which such knowledge is falsified can be different from falsifying a scientific proposition.

tualize“) knowledge, if I e.g. claim to be able to ride only that specific bike of type X, nonetheless many different situations of riding this specific bike of type X are possible. Also here, even if we do not refer to „all“ possible particularities, we refer to „all of something“ (Schauer, 1991; Tsoukas, 2005a, p. 78)¹³⁰.

Also Tsoukas supplemental types of organizational knowledge, i.e. „propositional“ and „narrative“ knowledge, are at all times in tension to their application context. As we have concluded in chapter 3, narrative knowledge does not „solve“ the problem of a the gap, although it may be „closer“ and more „contextualized“ to the day-to-day world of organizational actors:

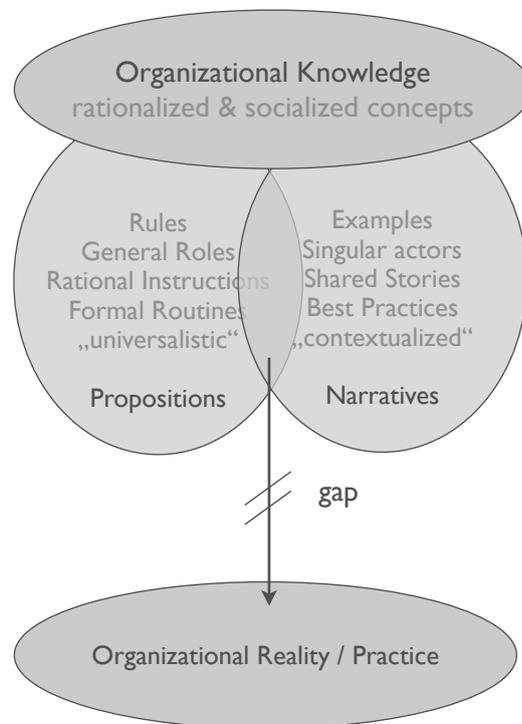


Figure. 8.1: Organizational knowledge (no matter in which form) is situated within the epistemic gap

At all our epistemological reflections - on the rationalistic, social, and organizational level - this epistemic gap emerged: between justification and truth (rationalistic epistemology), between theory and observation (social scientific

¹³⁰ If there were no gap between implicit knowledge and practice, then Schreyögg and Geiger would be right in proposing that tacit knowledge cannot be falsified (Schreyögg & Geiger, 2002).

epistemology), and between knowledge and practice (organizational epistemology)¹³¹.

Again, the correlation of epistemic and ontological structure of the organization (chapter 2.1) did neither entail that knowledge equals practice, nor that „knowledge is action“. This became more evident while looking at the application (chapter 3), as well as at the creation (chapter 4) of knowledge in organizations. As open-ended concept, knowledge cannot be unequivocally applied to organizational practice. There is also no clear-cut method in how new knowledge is created out of practice. Despite a whole bulk of rationalistic (knowledge) management literature, there are no fully reliable rational rules determining how knowledge is to be created or applied. Organizational knowledge is located in an underdetermination problem due to a structural (i.e. logical) gap between knowledge and organizational reality, i.e. its practice.

In part II we showed that this gap is grounded in the concept of knowledge itself which is trapped within a tension between justification and truth (where the gap was evident as the Gettier problem), just as in the sciences between theory and observations (where the gap was evident as the underdetermination problem), and, just as in organizations, between knowledge and practice (where the gap was evident at the application and creation of knowledge).

8.3 The normative epistemological reaction to the gap

Although knowledge creation always is a contingent and open event, our epistemological reflections pointed out that it needs more for something to be knowledge than just to be beliefs, content, or distinctions. This is verified by our intuitions: just to believe something does not make it true, nor does it automatically make it accepted by others. Hence, there has to be a process for a mere („subjective“) *knowledge claim* to become accepted and used („objec-

¹³¹ Strictly speaking, we should in almost all cases talk about „knowledge claims“ instead of „knowledge“. „Knowledge“ in its pure rationalistic sense would mark a „justified and true knowledge claim“, i.e. knowledge which already has been justified. From our social epistemological viewpoint, knowledge is a knowledge claim which had been accepted and verified within a community. Within an organization, knowledge is a knowledge claim which has been applied and integrated to practice.

tive“) *knowledge*. To understand this transformation as a social process was one task of social epistemology. The other was to define, which validation processes knowledge claims have to go through to be accepted and confirmed within the respective community (chapter 7), and which normative criteria ought to guide such processes.

These normative criteria may be of relevance also for our inquiry, since (as chapter 5 showed) there is a need for normative distinctiveness also in the field of organizational studies. There is a need, because existing approaches are mainly driven by the aim to *describe* organizational knowledge. This *descriptive view* asks questions like: what are the different types and forms of knowledge in organizations? How can they be categorized and what are the differences? How is creation and application of knowledge connected to actions and to the structure of the organization? How are we able to empirically explore different types of organizational knowledge? Such descriptive view tries to identify *epistemic attributes* of the organization. In part I we found - on multiple levels - answers to the asked questions above. We learned that knowledge in organizations is distributed on three dimensions, i.e. as representation, meaning, and practice. We explored typifications of organizational knowledge like explicit vs. implicit, propositional vs. narrative, and so forth. We made the general statement that knowledge enables organizations to make distinctions in order to construct their world, to give meaning to its objects, and to carry out action. In this „strong sense“, knowledge creates, orders, and „organizes“ the organization. Knowledge creation was described as an open process emerging out of organizational practice. Through legitimization and acceptance processes knowledge is being established and institutionalized in the organization - it is being translated to ontologically effective routines or narratives, into guiding blueprints, implicit skills, and common sense. Again, this is a „descriptive“ view about the different forms of organizational knowledge, how it is being transformed from one state to another, and how it is related to organizational practice.

A *normative view* has to be located slightly different. It tries to formulate criteria for qualifying something to become knowledge: we do not only want knowledge to make distinctions, we want knowledge to make *right* distinctions. Thus, the main challenge for an organizational epistemology is to provide grounded criteria for defining what qualifies an organizational social context as *knowledge-producing*. I.e. how ought organizational distinctions become organizational knowledge rather than staying mere distinctions. It is this search for *epistemological criteria* (the „normative view“ / „organizational epistemology“) which goes beyond the search for mere *epistemic attributes* (the „descriptive view“ / „theory of organizational knowledge“).

The normative view, i.e. an *organizational epistemology*, is driven by the aim to define and develop normative criteria for organizational knowledge creation. Hereby, it has to be seen not as substituting but rather as supplementing the *theory of organizational knowledge* presented in part I.

Part II and its discussion about normative criteria of the social field of knowledge creation provides concepts which we want to use in this part III of our inquiry. In part II we saw how the descriptive approach of scientific studies (ANT, constructivist approaches) was supplemented by a *normative social epistemology* (chapter 7). Now, why not try to supplement the descriptive approaches of organizational knowledge with an *organizational epistemology*? Why not try to apply the developed general epistemological criteria for social fields of knowledge creation to the field of organizational knowledge creation?

Chapter 9: Epistemological criteria for organizational knowledge

9.1 Locating epistemology in organizations

To make normative elements useful for an organizational epistemology we need to explore the implications of social epistemology for organizations. Doing so is both possible and eligible since we have already shown that non-dichotomized social epistemology is generally applicable to any knowledge-based community (see chapter 7.10).

First, we have to answer the question *where* social epistemological norms could be located within the organization. In part I we have seen that organizations create knowledge (like propositions and narratives) as distinctions on the levels of *representations* (at the syntactic dimension), *meaning* (at the semantic dimension), and as a relation to *action* (at the pragmatic dimension). We have also seen that knowledge creation is a transformative process in three steps: (1) knowledge creation is triggered by events like problems, breakdowns, or other perturbances within organizational practice. Then (2) new distinctions are created, for instance, a new solution, a modified routine, a new best-practice or narrative, and so forth. Finally, (3) these new distinctions become part of the stock of organizational knowledge; *or not*. It is this creation as transformation (or non-transformation) from „subjective to objective“ - from mere distinction to knowledge - where epistemological norms have to be located:

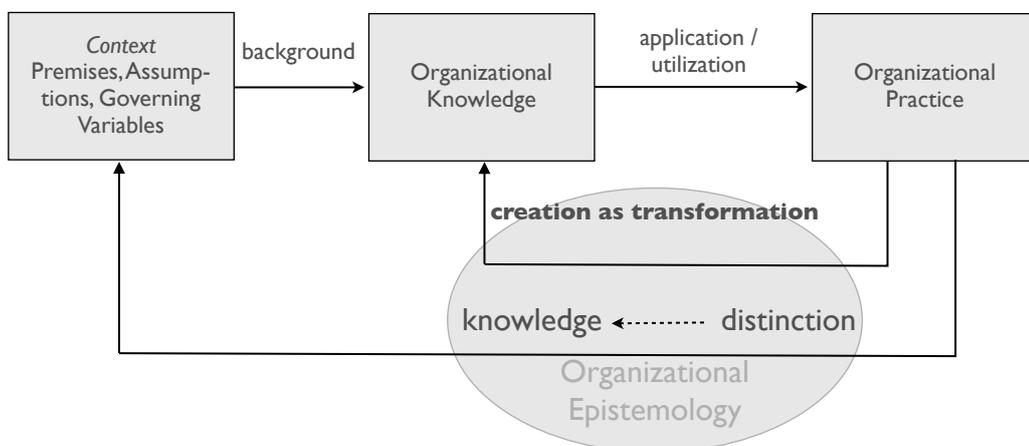


Figure 9.1: localizing organizational epistemology

It also is here where a normative approach (as organizational epistemology) offers new contributions compared to a descriptive approach (as theory of organizational knowledge). The latter (the descriptive approach) simply says that the transformation is a social process, for example, within an actor-network; the former (the normative approach) says the same, but additionally provides criteria which aim at guiding the transformation process towards bringing forth successful knowledge creation.

To opt for social epistemology as groundwork for an organizational epistemology has two general implications:

- (1) Unlike „social dichotomizers“ (chapter 7.1.1), we do not say that knowledge is anything that allows to make distinctions. Knowledge rather ought to be qualified by specific criteria and its creation guided by specific norms.
- (2) Unlike the „rational dichotomizers“ (chapter 7.1.2), social epistemology suggests criteria for the *social environment* of the knowledge translation process.

Hence, if we understand organizational practice based on knowledge and accept the solution provided by social epistemology, then an organizational epistemology is both (1) *normative* and (2) *social*. Then an organizational epistemology pursues the objective to *normatively guide organizations in designing their social knowledge creation environments*. But what are actually the implications from shifting social epistemology to organizations?

The following sub-chapters try to reformulate the normative implications of social epistemology on the field of organizations. This reformulation will be based on the social epistemological requirements (a) to *enable* critical discursive interaction, (b) to *constrain* knowledge towards acceptance and confirmation with regard to aims and standards, and (c) to repeatedly *reflect* upon these aims and standards. The results of the upcoming chapters are normatively laden and will be defined as „guidelines“ for organizations (and, more specifically, as guide-

lines for knowledge management). The upcoming chapter 10 will then discuss these guidelines along an extensive use-case.

9.2 First guideline: *enable!*

The transformation process from mere content to knowledge ought to be embedded in a space of critical discursive interaction. This was one central normative concept of social epistemology. Therefore, one guideline for organizations is to make open and critical discursive interaction possible on all levels of knowledge creation. In other words: *organizations ought to provide spaces of critical discursive interaction if they aim at facilitating successful knowledge creation* (Peschl, 2003).

One basic characteristic of such discursive interaction is *openness*. As we saw in our analysis of knowledge (chapters 6 and 7) underdetermination and open-endedness call for a variety of enabling factors within the knowledge creation environment: plurality of actors participating in the knowledge creation discourse; equal access of participants to needed information and standards; multiple views; and critical interaction from many different perspectives. That these factors facilitate knowledge creation is due to the open nature of knowledge which we found both in our discussions about organizational knowledge (part I) as well as in knowledge in general (part II). Hence, *knowledge management*¹³² ought to incorporate these normative values in order to enable organizational actors to participate in an open knowledge creation process. Let us discuss, in more detail, what it means for an organization to provide an open and enabling knowledge creation environment.

9.2.1 Inclusion

One initial step of such enablement is that the general task of knowledge-creation can be assigned to a wide range of organizational actors, and that it is

¹³² by „knowledge management“ we henceforth subsume all organizational measures which strive at providing successful knowledge creation environments, i.e. knowledge management from our point of view ought to implement our here developed organizational epistemological guidelines.

not necessarily restricted to a limited group of individuals. This is one guideline which can be derived from the norm of „tempered equality“ defined by social epistemology (chapter 7). There we said that „critical discursive interaction“ requires to include as many views as possible and to avoid „exclusionary practices“.

Contrary to scientific communities, in organizations many actors may not even know that they are potential sources of knowledge creation. This is why knowledge management should assist organizational actors to develop *epistemic awareness* and to actively engage in knowledge creation. This is important because the domain of knowledge creation and innovation is often ascribed exclusively to „research & development“ (R&D) departments, to management, or in general to higher educated people. Of course, R&D people are more likely to come up with new ideas simply because it is an explicit part of their role description. And of course, managers do, since it is one of their defined tasks to improve processes. But other organizational members, which directly are involved to what is happening „on the ground“, may have different and fresh perspectives at their disposal which are not given to R&D or managers offices. What a shift worker on the assembly line notices, or a retail person in the store sees, may provide important input for knowledge creation. Our use-case below (chapter 10) will show that also perspectives offered by organizationally „lower“ positions should be taken into consideration.

Note that this is not an ethical issue: we do not say that separating „higher“ from „lower“ class employees is unfair or unjust (although this may be the case) but that it is epistemologically ineffective. This corresponds to our previous finding that the exclusion of specific groups is not only a „social injustice, but a cognitive failure (because it) reduces the critical resources of the community“ (Longino, 2002, p. 132).

Hence, one enabling guideline is to extend the „critical resources“ of the organization and to include a variety of potential knowledge producers. This ought to be done by creating awareness as well as by providing processes through which organizational actors can participate in knowledge creation activities. One measure may be to evaluate and revise job descriptions as well as

to offer support (like workshops and further education) for organizational actors to get used to new tasks¹³³.

9.2.2 Critical multi-perspectivity

To multiply the sources of knowledge creation does not mean to give assembly workers a desk in the R&D department¹³⁴. It rather means that actors on all hierarchies and functions are engaged in critically evaluating given knowledge and creating new knowledge *from their specific point of view*. That they understand routines, narratives, blueprints, rules, orders, etc. as a stock of knowledge (i.e. that they develop epistemic awareness) which is not simply given but contestable, not fixed but changeable, not always right but falsify-able. This is why we should talk about *critical* multi-perspectivity: given knowledge should not only be applied but also scrutinized, it should be understood as open-ended and contingent. Rationalized or socialized organizational concepts are to be apprehended as organizational knowledge *and* are also to be seen as black boxes which can be opened and reconfigured.

Note that measures for enabling „multiple perspectives“ not only have to try to involve as many different organizational actors as possible (i.e. to widen the „critical resources“ of knowledge creation). It also means to encourage actors to adopt different standpoints and to take multiple possible perspectives into consideration. Our upcoming use-case (chapter 10) will present different examples for how to implement multi-perspectivity. Furthermore it will show that organizations which are committed to critical reflection from multiple perspectives are more flexible towards change, and that they are, by most measures, more successful.

According to this reformulation of the norms of „venues for“ and „uptake of criticism“ (chapter 7.5.1), organizations ought not only to *allow* but to *encourage* participation in knowledge evaluation and creation. Furthermore, organizations have to provide an environment where outcomes actually are taken

¹³³ See also the suggested measures in the upcoming sub-chapter „critical multi-perspectivity“.

¹³⁴ Although measures like „job rotation“ (Cunningham, Dawes, & Bennett, 2004, section 3.6) or „job complexes“ (Albert, 2004, chapter 6) may be effective steps in opening and enabling multiple perspectives.

up and forwarded to processes of organizational change. Measures in enabling such a critical multi-perspectivity range from the general task of establishing a culture of openness, error-tolerance, and active articulation, down to activities like setting up improvement-feedback mechanisms¹³⁵.

9.2.3 Transparent Standards

Just as in any scientific community also organizational knowledge creation has to be guided and constrained by aims and standards. This implies to provide knowledge producers with effective access to information about which aims and standards apply. This issue was addressed by social epistemology in calling for „public standards“ as an important criterium for critical discursive interaction (chapter 7.5.3).

The upcoming chapter 9.3 we will reformulate (scientific) aims and standards to organizational *goals* (what is the purpose of the created knowledge? how is it related to the goals of the organization?) and *structures* (in which way ought knowledge creation to be performed?). And we will define these goals and structures as *constraining* factors of organizational knowledge creation. For the moment, we are more interested in the *enabling* character of standards, i.e. that they (how ever they look like in detail) are transparently available for knowledge producers. In the case of organizations we may would not go so far and generally demand „public“ access to all internal standards¹³⁶. But even if successful organizational standards (like goals and structure) not always can be „public“ they at least could (and should) be *transparent* and accessible to all potential organizational actors of knowledge creation.

9.2.4 Summary: critical discursive interaction at organizations

We have reformulated the social epistemological features of critical discursive interaction for organizations:

¹³⁵ One well known best-practice is Toyotas activities in integrating the workforce to continuous improvement and adaption processes on a broad range (Liker & Meier, 2005; May, 2007; Rother, 2009).

¹³⁶ Although there are examples (as well as general reasons) which demonstrate the advantages of opening organizations internal processes and intellectual assets to the broad public (Tapscott, Williams, & Dierlamm, 2007).

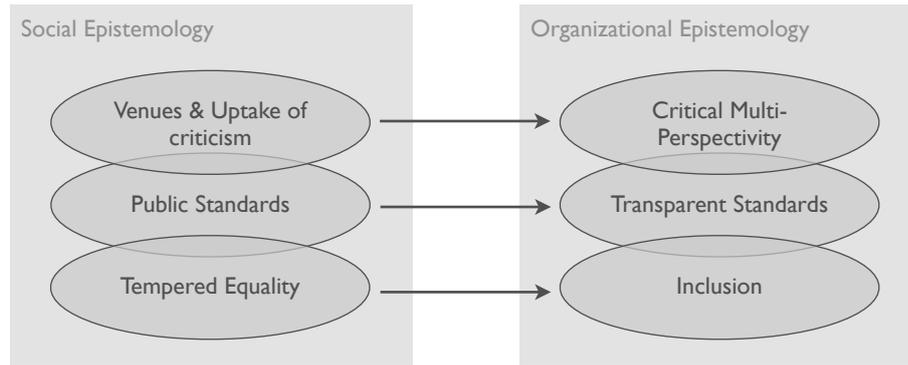


Figure 9.2: Guidelines for critical social interaction in social & organizational epistemology

Our upcoming use-case will shed more light on how organizations which follow the norms of inclusion, critical multi-perspectivity, and transparent standards thrive and generate successful results. However, our epistemological norms are not grounded by some use-cases where they happened to be successful. They are linked back to the general characteristics of knowledge itself, i.e. to underdetermination and openness. They are linked back to the insight that knowledge creation is open-ended and cannot be determined by universal deductive mechanisms, i.e. that rationalistic epistemology fails (see part II). Remember the important conclusion of the underdetermination problem: that theories go beyond the mere accumulation of data, i.e. that they are flexible in how to relate and explain data. And we should also remember that for social epistemology, this flexibility and open-endedness did not terminate in relativism but in norms demanding social knowledge construction environments to be critical and open in order to produce a wide range of possible results. Hence, *enabling* is not an epistemic norm because it always guarantees true knowledge. It is an epistemic norm because it forces the organizational space to actively take the open-ended character of knowledge into consideration. And only in doing so, an organization may become a place of successful knowledge creation.

Of course, critical openness and multi-perspectivity is only a first step. Only to enable a wide range of actors to create knowledge is not enough because this does not yet tell us something about upon *which* criteria (and generally *how*) to separate knowledge from non-knowledge. Strictly speaking, „enabling“ only produces *distinctions*, not already *knowledge*. This leads to our second guideline.

9.3 Second guideline: *constrain!*

Our first guideline opened the range of possible knowledge contributions by including multiple actors and perspectives. But to multiply perspectives not automatically multiplies knowledge. It „only“ increases possible approaches, suggestions, critics, and ideas (in a word: organizational distinctions) which still have to be transformed to accepted and confirmed knowledge. A successful knowledge creation environment, if it does not want to fall back to arbitrariness and relativism, has not only to produce data or information but to provide constraining processes of acceptability and confirmation, in order to produce knowledge. It has to provide processes which not only allow the new to emerge but also which also determine „what gets to remain in the (...) pool of information that counts as knowledge.“ (Longino, 2002, p. 129). It has not only to *enable* but also to *constrain*¹³⁷. To constrain is essential because, from a normative viewpoint, knowledge ought not to be any belief, or any content, or any distinction but ought to be qualified by its adherence to epistemological criteria.

In part II philosophical concepts were outlined which provided such epistemological criteria for constraining knowledge creation. We became familiar with two general philosophical approaches: rationalistic epistemology and social epistemology. *Rationalistic epistemology* claimed knowledge to be „justified true belief“ and to be based on universal definitions for justification and truth. *Social epistemology* shifted these criteria of knowledge validation to the social practice of knowledge creation. Social epistemological criteria were characterized by open knowledge creation and critical discursive interaction but at the same time also by acceptance and confirmation mechanisms. Hence, knowledge ought not to be any content produced in an open environment but to be „accepted confirmed content“ (chapter 7.5.4). Hereby, the terms „accep-

¹³⁷ This became clear already in chapter 7.5.3 while discussing the issue of „tempered equality“. On one hand the norm of „equality“ called for a plurality of participants. But only in a „tempered“ way, i.e. not at any price. We said that everyone is *invited* but not *automatically included* as an accepted part in criticizing and creating knowledge. This ought also to be the case at organizations: actors who want to be an eligible part of knowledge creation need to bring (or need to be equipped with) prerequisites to be able both to understand existing knowledge as well as to be able to be understood when bringing up critique and suggestions. Again in Longino's words: „Participants in a dialogue must share some referring terms, some principles of inference, and some values or aims to be served by the shared activity of discursive interaction“ (Longino, 2002, p. 130).

tance“ and „confirmation“ were not founded in rationalistic universality (like „justification“ and „truth“) but instead related to aims and standards of the respective epistemic community¹³⁸:

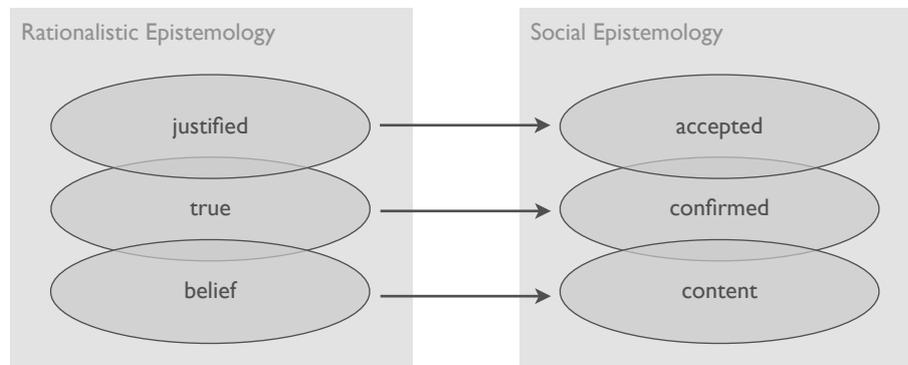


Figure 9.3: First shift: from rationalistic to social epistemology

9.3.1 From content to distinction

Basically, *organizational* epistemology is a variation (or subset) of social epistemology. Thus, we will focus on the slight shifts from social to organizational epistemology.

One difference between social epistemology and our organizational adaptation of it is based on our reflections from part I. There we interpreted the „content“ of organizational knowledge more generally as „distinctions“. The advantage of talking about „distinctions“ is that it includes anything which allows to make a difference, to understand, and/or to act in the world (see chapter 2). This includes not only written or other sign-based content, but also (re-)told stories, best practices, as well as different types of „tacit“ knowledge. Hence, we can reformulate „content“ as „distinction“. But what about acceptance & confirmation?

Generally we can say that since „every group or society is among other things a cognitive community“ (Longino, 2002, p. 146) the constraining criteria we are looking for *can* be aligned with the social epistemological terms of *acceptabil-*

¹³⁸ Of course, this was already prevalent in Longino’s call for an open space of „critical discursive interaction“: especially the norms of „tempered equality“ and „public standards“ (in our field of organizations: „inclusion“ and „transparent standards“) were marked by the fact that a discourse is not fully arbitrary but bound to specific aims and standards.

ity and *confirmation*. However, we do not deal with „scientific“ but with „organizational“ communities. Thus, it is important to understand what we mean with „standards“ (guiding acceptability) and „aims“ (guiding confirmation) within the context of organizations. What are the corresponding organizational counterparts of scientific aims and standards?

I would suggest to refer to how we defined organizations in chapter 1, i.e. as *goals* and as *structure*. There we saw that a collective gains the status of an organization if its activity is *structured* towards *goals*. Hence, any knowledge creation ought to be within, or at least related to those structures and goals. Consequently, we may define the following: if organizational distinctions (1) want to be *accepted* they need to be within the scope of the organizational structure. And if they (2) want to be *confirmed* they need to be aligned with organizational goals (at least with parts of them). Hereby, we have to distinguish between goals and structure of the domain in which knowledge is created (i.e. the „existing“ goals and structures; e.g. for which patients a nurse is responsible), and goals and structure of the knowledge creation process itself (e.g. the way how a diagnosis has to be entered to the IT system).

9.3.2 Acceptance & Confirmation: Constraining the domain of knowledge creation

Distinctions should be related to what makes sense within the organizational routines, habits, communication paths, and so forth, in order to enable useful action. For example, the nurse needs to create knowledge about specific patients; or the retail assistant (see chapter 10) needs to create sales orders only of available products, and, say, by considering an actual nationwide sales campaign. Again: knowledge creation ought to be directed towards goals and along structures of the organization¹³⁹. Just as the particulars of scientific knowledge (data), also the particulars of organizational knowledge (practice) allow high flexibility and open-endedness in regard to the outcome of knowledge creation. Therefore, organizational actors need guidance and support in order to not only

¹³⁹ This is even the case if a part of the structure of the organization is being created (e.g. if a new routine is designed). Also in this case the new routine has to be coherent to existing routines.

create distinctions but to create useful knowledge. This guidance should be provided by the knowledge creation environment.

Remember, again, our example of the nurse in the hospital (chapter 1.3.3). In order to facilitate and create useful knowledge she needed not only multiple perspectives and an open environment. In contrary, the main challenge was how to cope with the radical open-endedness of chaotic and equivocal „circumstances“ (J. R. Taylor & Van Every, 2000, p. 275; Weick, et al., 2005, p. 409). Both the evaluation of given knowledge (e.g. reading values from measuring devices) as well as the creation of new knowledge (e.g. making a diagnosis) were constrained and guided by organizational factors. Her activities were bound to *goals* (care for patients health, not for gardening) as well as to *structure* (report to the right supervisor in the right language) of the respective organizational field. Thus, her distinction-making (which served as basis for her actions) resulted in knowledge only by being aligned with organizational goals (confirmation) as well as with organizational structure (acceptance).

How exactly actors are facilitated to take goals and structure into consideration for their knowledge creation activities is very dependent on the type of knowledge that is being created (and on the type of actors involved). The general measure for this is to provide *appropriate communication of goals and structure*. The presented use-case in chapter 10 will give some examples how this can be done within an extensive meeting- and communication culture.

9.3.3 Acceptance & Confirmation: Constraining knowledge creation itself

But also the knowledge creation process itself needs to be structured. For example, a sales assistant not only fantasizes a sales hypothesis in his/her brain but has to be provided with routines and technology to actually formulate, enter, and issue new sales orders (see chapter 10). Similar, the nurse needs organizational structured routines and input instruments to properly store and communicate new generated knowledge, like that of a new diagnosis.

Hence, when designing new knowledge creation spaces, not only *existing* goals and structures ought to constrain. In many cases the organization has to develop

*new standards, procedures, and goals in order to set up new ways in creating knowledge. This is the case especially for new groups of actors who do not understand themselves as „knowledge“ producers. If an organization wants to open and extend the range of knowledge producers, then it also needs to extend its goals and structures. For example, if sales employees in retail stores ought to become knowledge producers (like to develop and verify sales hypotheses¹⁴⁰) they need to be provided with specific goals (when is a sales hypothesis successful? why is it important for my work to produce successful sales hypotheses and orders?) and structures (how do I enter a sales hypothesis? which process determines successful sales results?). To conclude, if actors ought to produce knowledge, the creation process itself has to become organizational. The creation process has to be reflected in the goals and structures of the organization. In other words: we simply should not forget that also *organizational knowledge creation has to be organized*.*

Let us summarize: if we connect the social epistemological criteria „acceptance“ with organizational structure, and that of „confirmation“ with organizational goals, then the *constraining* definition of organizational epistemology can be formulated as „accepted confirmed distinction“:

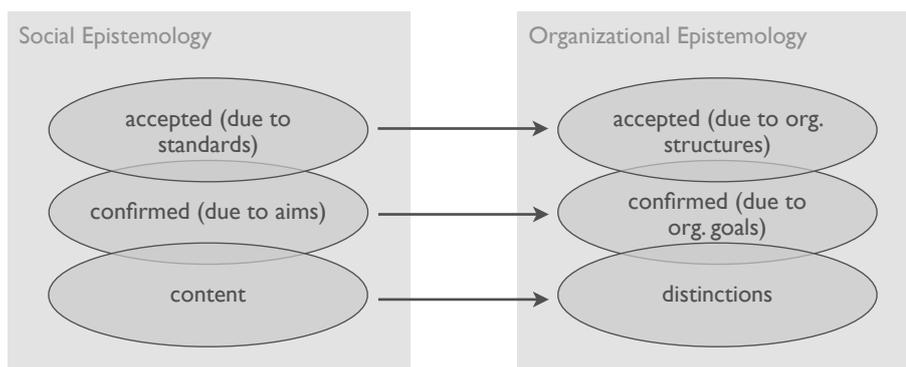


Figure 9.4: Second shift: from social to organizational epistemology

¹⁴⁰ see our use-case in chapter 10

9.3.4 The interplay between enabling and constraining

Figure 9.5 summarizes the enabling and constraining factors of organizational knowledge creation: our first guideline requires measures which widen the range of distinctions, whereby the second guideline narrows it down to the specific organizational context:

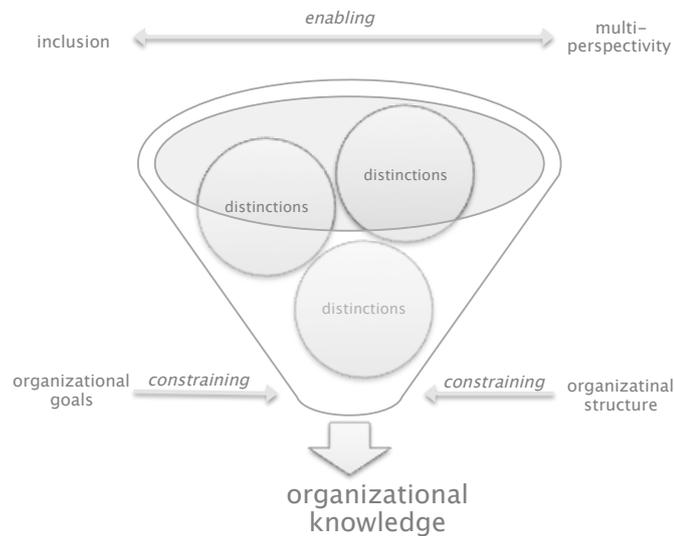


Figure 9.5: Enabling and constraining factors at organizational knowledge creation

Knowledge creation is a twofold process which ought to take place *both* within an enabling environment (due to the open-endedness and contingent character of knowledge) and within a constraining environment (due to the normative character of knowledge). This means that only the working together of both enables a fruitful space of knowledge creation. Knowledge management ought to carefully and permanently perform tradeoffs between the two principles as well as to be aware of the indispensability of both of them.

The interplay between enabling and constraining was prevalent at Longino's definition of critical discursive interaction. There we learned that the constraining activities of confirmation and acceptability have to be carried out in the enabling environment of a critical discursive interaction:

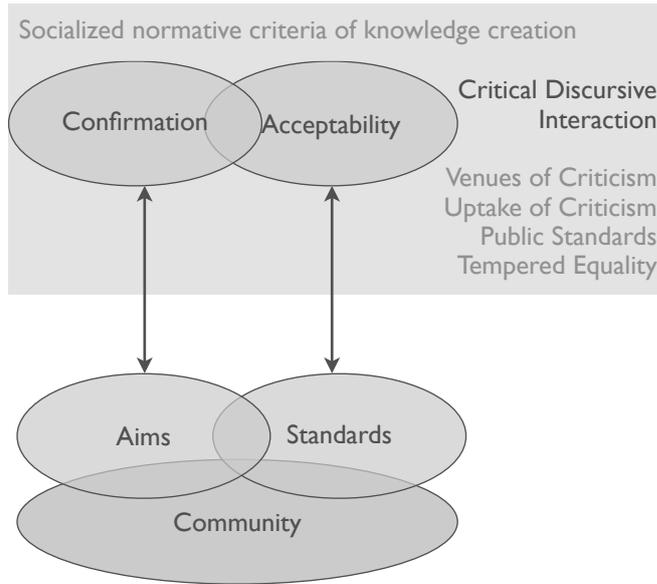


Figure 9.6: Social epistemological criteria of knowledge creation

According to our so previous reformulations, also organizational knowledge creation ought to be embedded in a space of critical discursive interaction which integrates enabling and constraining features. Figure 9.7 illustrates this shift from social to organizational epistemology:

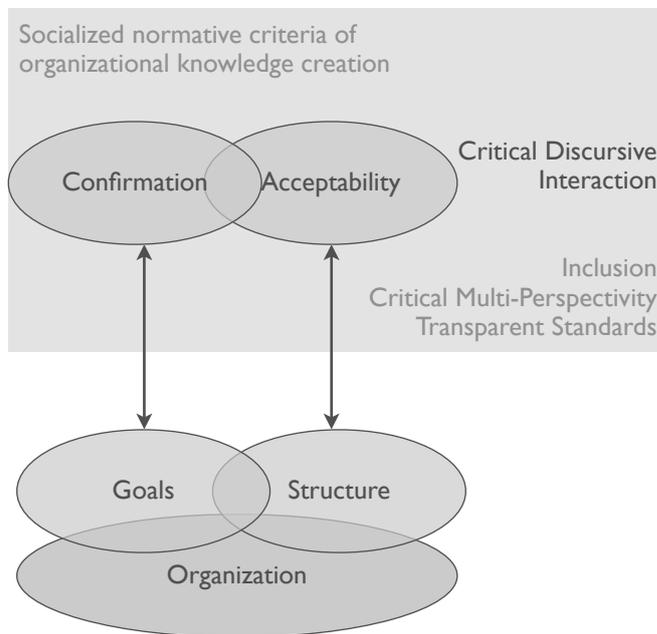


Figure 9.7: Organizational epistemological criteria of knowledge creation

9.4 Third guideline: *reflect!*

We said that organizational knowledge creation ought to be constrained by goals and structures of the organization. One advantage of this was to avoid arbitrariness and relativism. But what if these constraining factors, i.e. goals and structure, themselves are the subject of evaluation and (re-)creation activities?

We have already discussed examples of organizational knowledge creation where this is the case. For instance, at the design of the car-factory blueprint (chapter 4.4) basic goals and structures were at stake: the whole paradigm of car manufacturing was modified and redesigned. Hence, the blueprint was not a piece of knowledge created within guiding goals and structures, but itself was a new version of goals and structures. In such cases there actually may be no meta-structure left (i.e. no guiding goals and structures), simply because it is exactly this meta-structure which is being created. Such knowledge creation on a meta-level is the subject of our third (and last) guideline of organizational epistemology.

This third guideline becomes relevant at the moment we understand knowledge creation not only as an activity bound to constraining factors of a given (scientific or organizational) structure, but also as a reflective process which is able to critically evaluate and (re-)design that structure itself. Hence, there is an additional field of knowledge creation which is situated on a higher („second loop“) level. „Reflect“ then means to not only critically evaluate and create knowledge but also the criteria which constrain knowledge creation. For organizations this implies to put effort in providing an environment that produces awareness as well as processes to enable actors to rethink and to critically scrutinize the organization's core goals and deeper structures. This step is crucial because, as we know from the double-loop learning implications on organizations (chapter 4.2), some perturbances in practice cannot substantially be solved in a single-loop. Organizations ought to enable actors to produce knowledge both *within* (single-loop) as well as *beyond* (double-loop) given goals and structures.

This situation is similar to that of a scientific community which is not only critically creating new knowledge but also its standards on which its

knowledge creation is based on. If the latter is the case, the activity progresses from mere „puzzle solving“ to a „revolution“ (Kuhn, 1970). We then leave our „frame of reference“ and question its basic assumptions. At this point we see that „open-endedness“ is not only restricted to knowledge content itself but also involves its guiding aims and standards. As we saw in chapter 7.7 and 7.8, a reflective scientific community has to be aware of the fact that not only its stock of knowledge but also its aims and standards are possibly subject to change and may be (re-)constructed (Longino, 2002, p. 134f.).

To handle such „paradigm shifts“ is an important task for organizations, too. It can even become a vital feature, especially in cases where the organization cannot appropriately react to internal or external changes within its given goals and structures. If in such a situation the organization is not ready for radical reflection and restructuring, it is exposed to potential dysfunctionality or even disintegration.

The second guideline of *constraining* (after the first guideline of *enabling*) was driven by the fact that organizational knowledge creation is bound to goals and structures of the organization. Now, the third guideline is about to *reflect* upon on these goals and structures and to make them subject to critical evaluation and redesign. It is what we, in our discussion about social epistemology, called „second order discourse“ (chapter 7.7).

9.4.1 Does reflection lead to relativism?

But what about the normative and non-relativist stance of our approach if criteria of knowledge creation are themselves subject to a knowledge creation process? Which constraining criteria are in place here if, unlike to the second step of „constraining“, goals or structures cannot be provided since they themselves are at stake? If we cannot come up with any criteria, would we not fall back to relativism and loose the normative spin of our organizational epistemology?

In fact, in such cases we reach the limits of any epistemology which tries to come up with substantive normative criteria. We enter a space of openness where it becomes hard to find any guidelines. Of course we are not totally helpless: if not inside the organization itself, guiding constrains may be found in its

wider ecosystem¹⁴¹; or through reflecting on the deeper, more implicit goals of the organization and its actors. But this step of reflection is fully open in the sense that there may be no anticipation or definitive constraining factors at all. In the phase of „reflection“, openness returns in its most radical form: something totally new and unexpected may emerge which is not bound to any framing goals or structures.

Hence, we cannot formulate any substantive constraints or criteria anymore. The only normative criteria left are those connected to the openness of knowledge, i.e. those calling for an open and critical space of discursive interaction. This ultimately leads back to from where we started: to the guideline of enabling¹⁴². Like a scientific community which is redefining its *substantial* constraints of standards and aims (chapter 7.7) also organizational actors - in such a reflective stage - can only refer to *formal* normative criteria of „critical discursive interaction“. This implies that in the phase of „reflection“ the only normative guidelines an organizational epistemology may provide are again the values expressed in chapter 9.2 („enabling“). And in fact, if we face radical openness, i.e. if we are totally lacking constraining („governing“) variables, knowledge creation should at least be as open as possible. Thus, it should be based on norms like critical multi-perspectivity and inclusion¹⁴³. Openness, it seems, then is the only normative element of our third guideline. The features of critical discursive interaction are the only available principles and guiding norms which are left. These guiding norms do not determine the *substance* of knowl-

¹⁴¹ like e.g. in the Fiat car factory (chapter 4.4), where the constraints of the fordist paradigm collapsed. Here the only left footing was based on new post-fordist concepts found outside of the organization, but within the ecosystem of the automotive sector (especially in Japan) - this loose set of new concepts provided a wider framework for the new blueprint.

¹⁴² This is also a reason for illustrating our three guidelines as circle (see below in figure 9.9). Reflection, as knowledge creation process, always requires enabling and consequently also constraining which in the end may again trigger reflection (see chapter 9.5).

¹⁴³ This is confirmed by the observed creation of the car factory blueprint (chapter 4.4) where Fiat transcended the old fordist paradigm and entered a new frame of reference. The success of this knowledge creation process was linked to the fact that the outcome was a result of „a variety of options available“ (Patriotta, 2003, p. 183) and contingent to a *diversity of factors* as well as actors with different viewpoints „from conservative to progressive“.

edge but rather guide the *form* of social interaction in which knowledge creation is taking place¹⁴⁴.

Critics may state that ultimately this is a return to relativism. The argument of a universalistic (or rationalistic) philosopher could be that due to the openness of the third guideline („reflect“) the second guideline („constrain“) loses its non-relativistic direction, since the constraining factors (goals and structures) are relativized. The counter-argument would conclude that our approach does not offer a reasonable normative foundation. If we needed to restrict the first step of „enabling“ with the second of „constraining“, then why should we not restrict the third (open-ended) step of „reflection“ as well? This objection has even been our own line of argument: for instance, when concluding the first enabling-guideline we said that „openness alone is not enough“ and that multiplying distinction-making does not multiply knowledge creation. That was why we moved on to the second guideline, i.e. to constrain knowledge creation towards goals and structures. But this step seems not possible within the process of radical reflection. Within the latter there are no founding goals and no structures available for knowledge creation anymore, simply because they are the very objects of the creation process. Hence, there can be no criteria of acceptance or confirmation, and consequently no normative underpinnings.

We should be aware that this hypothetical critique deals in absolutes. In real world environments there is not that clear cut position. In fact, there are almost no cases in which *all* goals and *all* structures of an organization are at stake at the same time. Thus, a totally radical reflection is very unlikely¹⁴⁵. Even fundamental change processes usually are not happening in a totally fluid environment. For instance, the Fiat knowledge creation case was driven by radical

¹⁴⁴ see chapter 7.7 and (Longino, 2002, p. 148)

¹⁴⁵ This does not mean that organizational actors should not temporarily switch to a mode of radical reflection. To „let go“ from all constraining structures and to transcend the given - e.g. within the social technology of presencing (Scharmer, 2009) - is a powerful method for getting connected to new ideas and inspiration. But such a radical reflection is always only temporarily and ultimately part of the enabling-process. When it gets back to turn results of such radical reflection processes to concrete organizational knowledge, we again are confronted with questions of normative criteria, i.e. we are confronted with the task to align our new ideas („distinctions“) with organizational goals and structure.

reflection upon (and change of) fundamental principles of automobile manufacturing. But this did not happen in a vacuum. Not all given goals were at stake. In contrary, given goals like that of producing at a low price yet at a high quality, or that of to produce as efficiently as the Japanese competitors, made the whole knowledge creation process necessary in the first place (chapter 4.4). These goals were guiding criteria for the reorganization and knowledge creation process. Thus, the Fiat case demonstrates that general goals or structures of an organization can be in a pending state, while others are not. The latter then - to a certain extent - can be used as constraining principles and criteria.

Concluding in a more epistemological language, our position does not follow the *foundationalist* conception of knowledge, i.e. knowledge being based on some basic, taken for granted, principles. This would make these principles inaccessible to critical reflection, i.e. to a normatively guided evaluation and creation process. Knowledge creation (even on a reflective level) rather ought to be *coherent* with other available principles. These principles (in organizations: goals and structures) are connected rather as a network than as a hierarchy. If we are not to change all principles at the same time, then it is possible to understand the creation of new principles (or the modification of existing ones) as a process which still is normatively guided, namely by the unchanged principles¹⁴⁶.

The third guideline does not lead to radical relativism which undermines any normative perspective. „Reflection“ just reminds organizations that the constraining factors of knowledge creation processes are not carved into stone. While the second guideline highlighted the fact that creation of organizational knowledge has to be connected with organizational goals and structures, the third guideline accentuated that those constraints ultimately are contingent, thus should be accessible by critical organizational reflection. This means to accept the norm of to *constrain* knowledge creation (second guideline) but also to be ready to *reflect* upon the criteria which constrain knowledge creation (third guideline). The third guideline, so to speak, *constrains constraining*, which is nothing else than to invoke new knowledge creation processes on a higher

¹⁴⁶ Therefore, our position would epistemologically be categorized rather as „coherentism“ than as „foundationalism“ (see chapter 6.2.2).

level. This may sound like a merely theoretical dialectic statement but it is more than that. It points out a crucial requirement for today's organizations: to permanently (or at least periodically) scrutinize and reflect guiding principles, goals, and structures. This view does correspond with what we learned about knowledge creation in social epistemology, i.e. that critical knowledge creation within standards and aims also involves to critically evaluate the aims and standards themselves on a „second order discourse“ (chapter 7.7). It also corresponds with one general finding of organizational studies, i.e. that organizations which are capable of such reflection are more likely to cope with a changing environment (Høyrup, 2004).

9.4.2 Measures of reflection

A general measure in order to allow reflection is to shape an appropriate organizational culture which encourages and rewards critical reflection (Argyris, 2010; Burke, 2008; Marsick, 1988; Schein, 1992) and which generally nurtures diversity and open mindedness (Flood & Romm, 1996). More specific activities may be found in social technologies like „dialogue“ (Bohm, 2000; Schein, 1993) or „presencing“ (Scharmer, 2009).

But measures for „reflection“ are not only to be located in the sphere of awareness and motivation of individual actors (see e.g. Bolman & Deal, 1991). The organizational structure itself has to be reflective, i.e. organizational routines and workflows have to be reflective. In other words, besides the usual organizational routines which realize the organization's goals there is also demand for „second-level-routines“ which are dedicated to critical reflection on, and possible change of these goals and „first-level-routines“. In classical management literature this idea was taken up, for instance, by Peter Drucker who introduced the (originally Asian) concept of „kaizen“, i.e. continuous self-improvement (Drucker, 1992b; 1993, p. 92). „Kaizen“ urges organizations to be structured in a way which both allows and stimulates change, even of its basic principles. This reflection on change needs to be incorporated in the routines of the organization, not only into the minds of the actors. Therefore, F.B. Simon states that to establish an „intelligent organization“ what is needed are „routines

guiding the modification of routines“ (F. B. Simon, 2007, p. 65)¹⁴⁷. Such routines ought to provide recurring mechanisms which (1) periodically trigger reflective activities of actors at the level of a second-order discourse. They (2) also ought to provide channels for these reflections to take effect and to have impact on concrete change measures.

9.5 Summary

In shifting normative criteria of knowledge creation from social epistemology to the field of organizations we outlined a preliminary conception of an organizational epistemology. We applied principles of social epistemology (part II) to our understanding of organizational knowledge (part I). Hereby, we were supplementing the collection of *epistemic attributes* of organizations (provided by organizational studies) by *epistemological criteria* (provided by philosophy). These normative criteria were reformulated as „guidelines“ for successful spaces of organizational knowledge creation.

The first guideline is to *enable* organizational knowledge creation, i.e. to provide an open space of critical interaction. This implies to include as many contributing actors as possible, to incorporate multiple views, and to provide (and, where necessary, create new) transparent standards. „Enabling“ is rooted in the open-ended and pluralistic character of knowledge.

The second guideline is to *constrain* organizational knowledge creation, i.e. to regulate transformation from distinctions to knowledge. According to this guideline, knowledge creation needs to be aligned with organizational structures and standards as well as with organizational goals since not any distinction may be useful for the organization to „pursue its endeavors successfully“. Therefore, within knowledge creation environments, actors have to have access to the organization’s goals; they have to be able to dive into philosophy, values, and aims of the organization. The same is true for organizational structure: new

¹⁴⁷ authors translation - full citation context: „Eine wesentliche Funktion von Führung ist es daher, regelmäßig für die Reflexion der Qualität des Wissens und Nicht-Wissens der Organisation (...) zu sorgen, sowohl die Notwendigkeit des Erhalts als auch der Veränderung von Strukturen zu beurteilen und gegebenenfalls über zu vollziehende Umbauten von Prozessen zu entscheiden. Um eine „intelligente Organisation“ zu etablieren, bedarf es der Routinen zur Veränderung von Routinen“ (F. B. Simon, 2007, p. 65)

created ideas, routines, rules, best-practices, narratives, etc. ought to be oriented towards the specific organizational context they have been created for. „Constraining“ is rooted in the normative character of knowledge.

The third guideline is to *reflect* upon the constraining goals and structures, i.e. to be aware about their contingent character as well as about the general possibility to (re-)create underlying organizational principles. Organizations need not only to be *prepared* for a „revolution“ but also to *actively* and *continuously* reflect upon possible changes of its goals and structures. „Reflecting“ is based on the contextualized character of knowledge as well as it is based (again) on open-endedness which reenters the knowledge creation process on a second level.

This completes our view and allows a graphical summary similar to our summary of social epistemology (see figure 7.9). To enable, to constrain, and to reflect can be depicted as supplementing processes which allow the transformation from organizational distinctions to organizational knowledge:

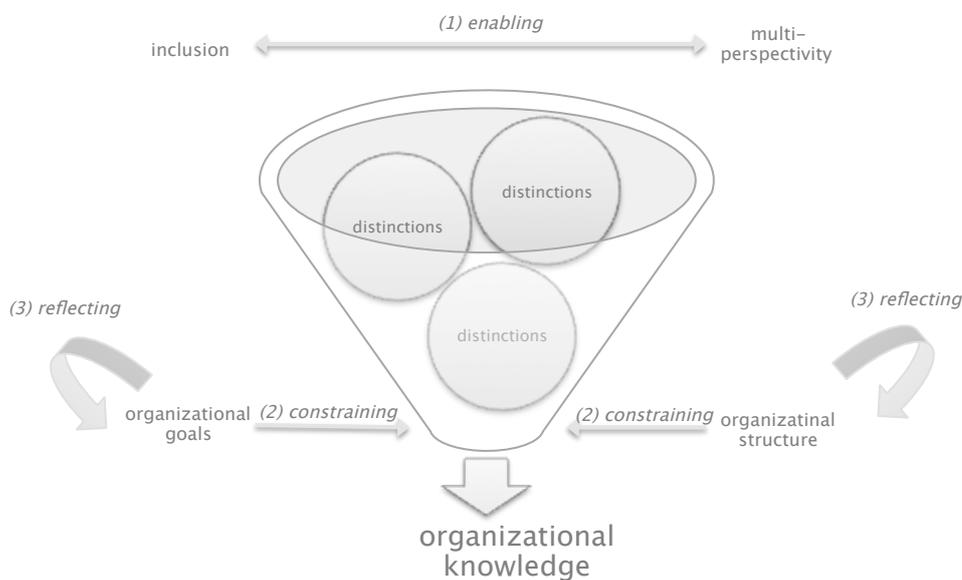


Figure 9.8: The three transformative guidelines of organizational knowledge creation

All three guidelines are jointly interrelated and can be interpreted as circular process. This process may be used as a template for evaluating existing and/or designing new organizational knowledge creation environments. *Enabling* opens a space of multiple distinction-making, whereby *constraining* aligns it to

organizational principles. Within *reflection* these principles may be modified which again influences further enabling and constraining processes:

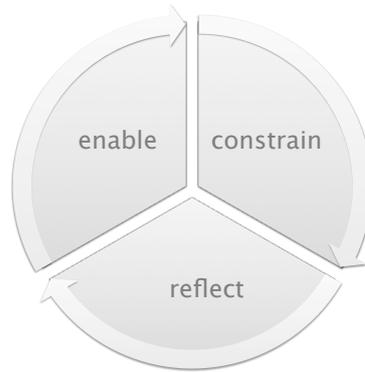


Figure 9.9: Guidelines of organizational knowledge creation as circular process

Chapter 10: Organizational Epistemology applied: Seven-Eleven Japan

10.1 Description Use-Case

10.1.1 The company

Seven Eleven Japan (SEJ) is one of the most successful convenience retailers in the world. Founded in Japan 1974 as a subsidiary of the „American Southland Inc.“ (later „Seven-Eleven Inc.“) it became the largest retailer in the country with more than 12.000 stores nationwide, generating a profit-to-sales ration twice as high as its competitors (Chopra, 2003; Kunitomo, 1997; Nonaka, et al., 2008, p. 138ff.). One pillar of its success is the specific way SEJ deals with organizational knowledge. Its (knowledge) management strategy has been exported to other Seven-Eleven franchise networks in 15 countries, and became a famous best-practice within both industry and research¹⁴⁸.

10.1.2 Item-by-Item Management

It is obvious that one main challenge of convenience stores lies in the ongoing decision making about which products to offer and which not. This is even more pressing for SEJ since the relatively small store sizes allow only a small selection of the whole SEJ assortment to be sold at one individual store. The question then is how to adapt each store to its local market, i.e. how to avoid „dead“ items (vs. „live“ items), and how to avoid opportunity costs (costs which occur through not offering products customers are looking for). To deal with these challenges SEJ decided to change the centralistic character of item-management and to delegate decisions on ordering (and canceling) items as much as possible to the individual stores. Therefore, SEJ came up with the measure to intensively include store staff in the item-management. Sales employees are „on the spot“ and have face-to-face contact with customers. This gives them valuable insights to local markets. Furthermore, they themselves

¹⁴⁸ Especially its information technology infrastructure made SEJ a well-known use-case in management schools and literature (Bensaou & Earl, 1998; Chopra, 2003; Ishikawa & Nejo, 1998; Nonaka, Reinmoeller, & Senoo, 1998).

are, in most cases, part of the local community. Toshifumi Suzuki, chairman of SEJ, says:

„I only have two eyes. There are several tens of thousands part-time workers at Seven-Eleven Japan stores. If anyone can make judgements on their own, we will have quite a few pairs of eyes.“ (Nonaka, et al., 2008, p. 142).

This is why all SEJ store employees are encouraged to sense the local market and to utilize their experiences with customers in order to detect sales opportunities and to perform item orders. Additionally to their „here-now“ experiences on-the-spot, sales employees are provided by SEJ with up-to-date information about sales figures, local events, weather, and so forth. With all this input, organizational actors at stores are empowered to create hypotheses about future sales development and to conduct according orders. These hypotheses are then tested and verified by sales figures, whereby results of this verification influence further decisions:

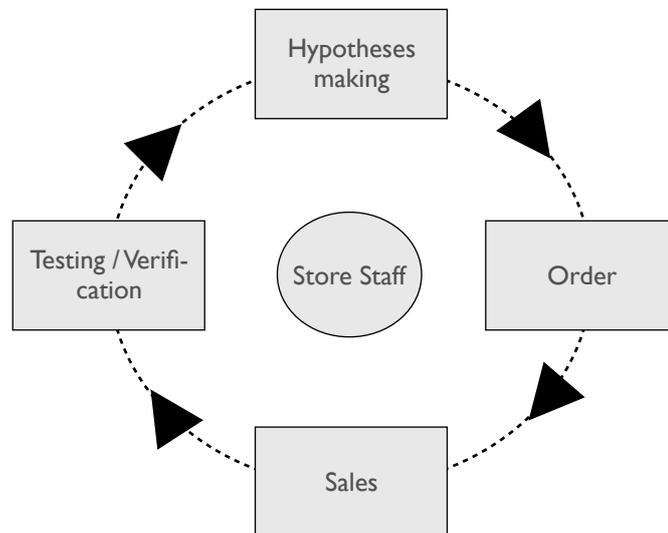


Figure 10.1: Knowledge creation at Seven-Eleven Japan

This knowledge creation process is done on a day-to-day basis and heavily supported by information technology. Each store is equipped with a „point-of-sale system“ (POS) which is connected to the overall SEJ network. One main feature of POS is to track and to digitally manage sales activities. This allows store staff to gather information about sales development of their products and assists them in their hypotheses making. The system is also used to actually execute

the item orders, and later on to verify whether expected sales were realized or not. Hence, POS is not only input-oriented, allowing stores to enter their hypotheses and orders, but also output-oriented, allowing to track the success of the item-orders.

Furthermore, the POS terminal is a multi medial device providing its users with real time information about a broad range of topics like (new) product information, SEJ campaigns, weather reports, and (local) events. Hence, POS is both an ordering system, as well as a valuable source of information guiding local item-management¹⁴⁹.

Figure 10.2 concludes the multiple sources of information store staff may access. Sources are not only available via the POS system but also provided by face-to-face communication with „field counselors“ from the SEJ headquarter (see next sub-chapter 10.1.3), and by the daily tacit experience at the shops.



Figure 10.2: Multiple sources of information enabling organizational knowledge creation

Nonaka & Takeuchi (Nonaka, et al., 2008, p. 138ff.) present a case from SEJ where store staff combined information from the POS system about an upcoming local festival with their own experience of similar events. They created hypotheses about increasing demand on beer and fast food, and consequently con-

¹⁴⁹ This is, of course, a simplified description. The POS system consists of different interconnected devices like bar-code scanners, POS registers, graphic terminals, and a store computer (Chopra, 2003, p. 5f.).

ducted orders of these items via the POS system. Subsequently, POS tracked the sales numbers of these products and in fact verified a significant increase during the specific period.

Another example is provided by a success-story from a store in the center of Tokyo. Here, staff members experienced increasing demand of salads, especially from white-collar women during lunch time. This was also partly verified by POS data. From POS information the staff furthermore detected a small increase of sales in the evening. By interpreting this data, as well as by taking experiences from customer-interaction into consideration, the hypothesis was created that some women in the evening buy in advance in order to avoid long waiting queues at lunch time on the next day. The reaction of store staff was to order higher amounts of salads in the morning and to advertise this at the store. The created hypothesis was based on the assumption that more (and even new) customers may be attracted, if they would get the possibility to avoid waiting queues at lunch time. And in fact, sales in the morning (as well as in total) increased and generated additional revenue which was also verified by the POS system.

10.1.3 Meetings culture

Support for item-by-item management is not only provided by the POS system but also by so called „Field Counselors“ (FCs). The latter are SEJ employees who consult and guide store managers. Each FC is responsible for a couple of stores which s/he visits twice a week. FCs are the main connection and communication channel between SEJ's head office and more than 12.000 stores. FCs provide stores with information about new products and campaigns but also constantly check and update SEJ philosophy, values, standards, and the compliance to prescribed procedures and routines.

At SEJ, direct face-to-face communication is generally in favor of other communication means. This is true not only for the communication between FCs and stores („store meetings“) but also between SEJ management and FCs („FC meetings“). At weekly „FC meetings“ all nationwide FCs and the SEJ management team meet at the head office. This large meeting, where around

1.600 people come together, is one central event of face-to-face, interactive knowledge sharing and communication. Here not only management communicates company values, aims, standards, new products, and campaigns. The FC meeting is also a venue for sharing experiences and insights which FCs bring into the summit from their interaction with the stores. Selected success stories (like that of the salad sales) are presented and shared, with the expectation to nurture similar successful item-management activities in other stores. With the impression of that meeting, FCs - at the same day - return to their region and disseminate the acquired information, instructions, and success stories during store meetings.

10.2 The theory of organizational knowledge applied to the SEJ use-case

Until now it should have become clear that the success of item-to-item management at SEJ is not simply because of the (high level and innovative) IT infrastructure. It is because the organization treats (and designs) the activity of item-management as a knowledge creation process. Furthermore, SEJ provides an epistemologically enhanced environment for knowledge creation, i.e. it is carrying out and implementing the guidelines of enabling, constraining, and reflecting¹⁵⁰. Hence, SEJ is a proper use-case for our purposes. It both is interesting from the view of *organizational knowledge*, as well as from the view of *organizational epistemology*. Let us start our discussion by interpreting the use-case through our first theoretical toolkit of organizational knowledge from part I.

10.2.1 Item-management as distinction-making on three levels

In SEJ, knowledge is explicitly seen as the basis for organizational action. In this case, constructing hypotheses is the basis for conducting item orders. According to our strong sense of organizational knowledge (chapter 2), knowledge enables organizational actors (store staff) to make distinctions in order to per-

¹⁵⁰ Of course, the use-case has no direct connection to our organizational epistemology. However, it serves as a best practice since it implicitly fulfills most of the guidelines of our organizational epistemology developed so far. It therefore is an optimal use-case to exemplify the developed guidelines from chapter 9.

form action (to make orders). Store staff is involved in the creation and application of several forms of knowledge at different levels of distinction making:

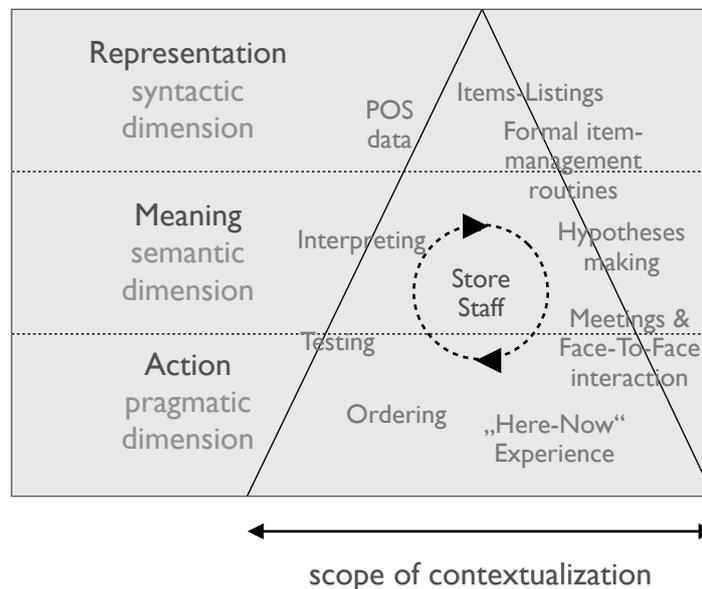


Figure 10.3: The triadic structure of organizational knowledge applied to item-management of Seven-Eleven Japan

Many of these distinctions are encoded and further processes (largely by the POS system) in a representational form. And as formal organization, of course all activities are embedded in formal routines within goals and standards. But only interpretation of these distinctions and their connection to meaningful action makes them usable for organizational practice. Only contextualization to local circumstances, performed by organizational actors, allows successful hypotheses building. Of course, to detect specific patterns which emerged from the past can be done simply by copying raw sales data from the POS system. But to determine „what will sell in the future depends largely on intuitive understanding of the market, based on accumulated tacit knowledge“ (Nonaka, et al., 2008, p. 143). This is why the „here-now“ experience of store staff is that important, and why decisions should not be fully determined by some sales executives in the headquarter. Interaction and dialogue with customers at the „point of sale“, i.e. at the store, is one crucial pillar of SEJ’s success. But just as interaction with customers „on-the-spot“, also interaction with other organiza-

tional actors, like colleagues and FCs, turned out to be essential for understanding and hypotheses making.

This „socialized“ knowledge is crucial. And so is „rationalized“ knowledge from the POS system and from formal working routines. Both together allow store staff to „continue to create hypotheses based on an ability to understand the essential meaning of consumer behavior and the phenomena affecting it“ (Nonaka, et al., 2008, p. 143).

10.2.2 Creating and applying organizational knowledge at SEJ

Within our approach from part I we could understand all enumerated *rationalized and socialized distinctions* as organizational knowledge. As knowledge that is created in and applied to an organizational practice by organizational actors.

Sales staff first create hypotheses by combining „socialized“ concepts - like the intuitive sense for markets, experiences with customers, and communication within FC meetings - with the more „rationalized“ data from the POS information system and with the procedural knowledge of given formal item-management routines. This activity results in hypotheses for further sale opportunities (or the prevention of sale losses) which are communicated to the item order system. But to generate an order (or more precisely, to let the POS generate an order) out of a newly created hypothesis is nothing else than to apply a new piece of organizational knowledge¹⁵¹. Thus, creation and combination of knowledge turns to effective organizational action only when it is applied to organizational practice. Here we can also locate the gap between knowledge and practice (see figure 10.4). It is a gap not only because of our terminological distinction. It is a gap because a situation (or problem) in practice cannot be unequivocally related to a stock of successful knowledge. And it is also a gap because it never is certain if application of knowledge to its practice will be successful. The reason for that has been explicated in our reflections on knowl-

¹⁵¹ Strictly speaking, not only the newly created hypothesis is applied, but also all other mentioned knowledge items which guide the organizational activity of ordering items (like formal SEJ item-management routines, best-practices from FC meetings, tacit knowledge about customers, etc.).

edge: underdetermination and open-endedness imply an unescapable gap between knowledge and its particulars.

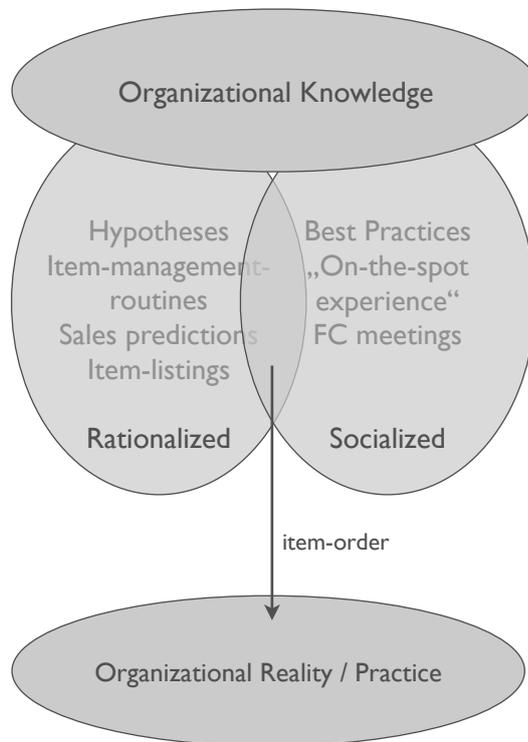


Figure 10.4: Rationalized & socialized organizational knowledge at Seven-Eleven Japan

10.2.3 Looped knowledge creation & application

For sure, application of organizational knowledge is not the end of the knowledge creation process. Application results in changes in practice. These changes have to be interpreted, verified, tested, and so forth. And also here the SEJ items-management workflow plays an important role since the POS system not only serves as an ordering service but helps employees to test their hypotheses against real customer behavior. And since there is a gap between knowledge and practice, it always may be that knowledge-application turns out to be unsuccessful¹⁵², which would initiate a new knowledge creation process:

„if a gap is found to exist between the newly acquired knowledge and the reality, a new spiral of knowledge creation is triggered.“ (Nonaka, et al., 2008, p. 151).

Thus, corresponding to our theoretical claims in part I, SEJ shows that *knowledge creation and application are interchanging events revolving around the*

¹⁵² In fact, an entirely fixed set of organizational knowledge is theoretically impossible, like, for instance, no scientific theory will ever be freed from possible falsification.

gap between knowledge and practice. The gap is the moving force which continuously initiates new attempts of knowledge creation.

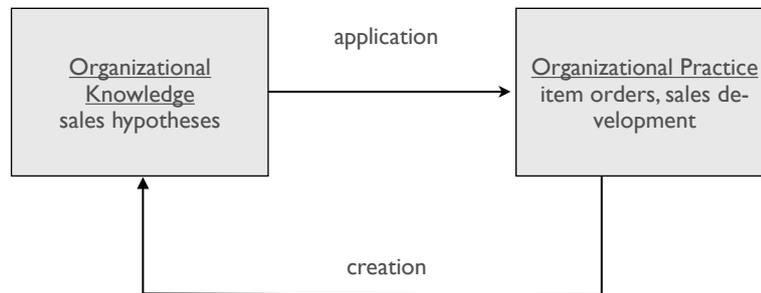


Figure 10.5: Knowledge creation and application at Seven-Eleven Japan

Note that this process of knowledge creation also demonstrates the tension between *being and becoming* (chapter 4.3.2). Until the actual order occurs, the knowledge process is open and not fully predictable - the result is non-determinable. Knowledge is in a fluctuating state of becoming. But as soon as the hypothesis is being created and the order generated, knowledge transforms to being. It is black-boxed and as such a possible source of operationalized organizational action. But of course only temporarily. And only as far as the hypotheses works and triggers expected sales¹⁵³. If a hypothesis is not performing well anymore, then this is noticed in the testing/verification phase (see figure 10.1). In such a case the black-box has to be reopened, and new hypotheses building, i.e. new knowledge creation has to be performed.

10.3 Organizational Epistemology applied to SEJ use-case

The SEJ use-case is not only interesting as being interpretable by our first theoretical toolkit, i.e. by a theory of organizational knowledge. It is especially interesting because SEJ has designed an organizational knowledge creation environment which largely seems to comply with the normative implications of knowledge. Hence, we will apply our second theoretical toolkit in order to see how its normative guidelines are realized at SEJ.

¹⁵³ all of this presupposes that the SEJ workflow is fully implemented, i.e. that sales development is continuously checked, and that significant difference between predictions and reality triggers measures.

Let us repeat: our normative reading says that knowledge is not to be seen as any distinction which allows action. Instead, while creating knowledge, organizations should make efforts to create the *right* distinctions allowing *right* action according to goals and structures of the organization. Here, the philosophical approach of social epistemology turned out to serve as suitable groundwork since it (1) connects the idea of knowledge to successful *social action*, as well as (2) it develops *criteria for the social space of knowledge creation*. By shifting the outcomes of social epistemology to organizations in chapter 9, we were able to formulate three guidelines of organizational epistemology: *enable*, *constrain* and *reflect*.

Now, we will explicate the normative-epistemological character of the SEJ use-case in understanding the item-management workflow through the lens of these three guidelines.

10.3.1 „Enabling“ at SEJ

That SEJ provides an enabling knowledge creation environment can already be seen in the way how the company treats not only management or R&D employees, but also sales employees as important knowledge creating actors.

Inclusion

SEJ's first measure towards a pluralistic and open knowledge creation environment is to include store staff in creating important organizational knowledge assets like sales hypotheses and item orders. According to SEJ's philosophy, sales hypotheses are created not upon the CEOs „two eyes“ only, but by contributions of potentially all store employees within their daily practice. This causes a transformation from a usual top-down leadership to a model of „distributed leadership“:

„change is not achieved by a charismatic leader, but through a collective knowledge-creating process, where leadership is distributed.“ (Nonaka, et al., 2008, p. 142).

From our point of view, the reason for this is epistemological. The nature of knowledge (open-endedness and underdetermination) requires creation proc-

esses to be not only mechanical reasoning-processes but to be designed as socially embedded and pluralistic. We should remember the social epistemological line of our argument: as knowledge is open-ended and cannot be validated by rational methods alone, critical social interaction needs to fill (or to cover) that gap. This is done within a discourse of different actors offering different views on the subject matter. Such a multiplicity of different views is required to avoid knowledge creation to be determined by the „whim of individuals“ (Longino, 2002, p. 130f.).

To let local sales employees participate in knowledge creation, follows another social epistemological insight, namely that knowledge is not universal but bound to local communities: one and the same sales hypothesis may be „true“ in Tokyo but not in a rural area. Thus, from our organizational epistemological view, what SEJ calls „distributed leadership“ is nothing else than the inclusive multiplication of different knowledge creation actors. At SEJ such inclusion-strategy builds the indispensable first step for maximizing critical discursive interaction in order to open a pluralistic space of knowledge creation.

Critical Multi-Perspectivity

To increase multiple viewpoints is not only achieved by encouraging *different actors* to create knowledge but also by enabling these persons to take *different views*. The latter aims at a space of multi-perspectivity for each sales person in order to facilitate successful hypotheses building. To enable such multi-perspectivity at the level of store staff, SEJ sets up two main measures.

First, SEJ designs the knowledge creation environment as a multi-channelled information flow. Hypotheses making is supported by information provided by the POS system: sales trends, weather forecasts, local and global events, SEJ campaigns, product information, and so forth. Furthermore, experience with local community and customers, as well as face-to-face communication with FCs, is seen as valuable input in order to generate a multi-perspective view. Figure 10.2 already offered an overview on the multiple perspectives

which are used to evaluate the situation and to conduct knowledge creation at SEJ's item-management:



Figure 10.2: Multiple sources of information enabling organizational knowledge creation

Second, SEJ encourages its sales employees to create their hypotheses not only from their personal standpoint but from other possible views, too. This is achieved by prompting them to consciously incorporate multiple possible customer perspectives. The idea behind this measure is to „think *as* customers, instead of thinking *for* customers“ (Nonaka, et al., 2008, p. 144). According to SEJ instructions, sales employees have to create their critical hypotheses based on (a) the perspective of an average customer, (b) the perspective of an average family, and (c) the perspective of a close friend. This aims at „suspend(ing) judgements based on preconceptions and past experiences“ (Nonaka, et al., 2008, p. 144):



Figure 10.6: Multi-perspectivity at Seven-Eleven Japan

Here again we can see that these measures, introduced to enable multiple stand-points and perspectives, are not chosen because diversity has a value in itself. They are chosen because they „suspend judgements based on preconceptions“, i.e. the more participating actors the higher the probability to keep the quest towards knowledge critical and to avoid idiosyncratic stagnation.

Multi-perspectivity combined with the principle of inclusion¹⁵⁴ enable an open and critical space which puts knowledge creation to its social context and which multiplies both perspectives of actors and possible knowledge outcomes. To conclude, it should be part of any knowledge management strategy to enable such space for critical discursive interaction. Based on our shifting of social epistemological groundings to organizations, this means to implement the guidelines of inclusion and multi-perspectivity.

But from the social epistemological discussion we also know that in order to allow this to happen, *transparent standards* are needed to further guide the knowledge creation process.

¹⁵⁴ which ultimately is nothing than another form of multi-perspectivity, because to include as many actors as possible is to multiply the perspectives taken.

Transparent Standards

As SEJ is a formal organization, also knowledge creation is - to a certain extent - a *structured* activity, i.e. also knowledge creation is „organized“. There are standardized routines which regulate how to retrieve information from the POS system, how to input, test, and verify hypotheses. There are also standards which help to specify when a hypothesis turned out to be working, and when not. Other standards are located on higher levels, revolving around general SEJ values and goals.

At SEJ, all these standards are transparent in the sense that they are continuously communicated through all hierarchies of the organization. Both high level standards (like general SEJ values) as well as those specifically governing item-management are part of the communication-flow from management to FCs, and from FCs to store staff. Transparency here not only means that standards are accessible, but also that they actually reach organizational actors (e.g. sales employees) and play a role in daily organizational action (e.g. within the item-management workflow).

This feature of critical knowledge creation is important, because it gives knowledge creation a direction. It shows that even an open environment needs constraining guidelines in order to produce knowledge in a normative sense. Therefore, the feature of transparent standards leads directly to the second guideline of „constraining“.

10.3.2 „Constraining“ at SEJ

During the step of *enabling* a wide spectrum of possible outcomes was opened. But, as we said in chapter 9.3, multiplying perspectives does not automatically multiply knowledge. With Helen Longino we could ask: how does SEJ provide an environment which not only allows the new to emerge but also determines „what gets to remain in the (...) pool of information that counts as knowledge.“ (Longino, 2002, p. 129)? How is the separation between knowledge and non-knowledge, between successful and unsuccessful knowledge, between mere dis-

inction and knowledge regulated? Which measures does SEJ take to qualify the organizational environment for *knowledge*-production? How is SEJ's item-management guiding the transformation from the „subjective“ to the „objective“?

At SEJ, the main process towards epistemological constraining is the hypothesis-cycle itself. The fact that subjective distinction-making is embedded in a hypothesis-verification circle (figure 10.1) strongly indicates a normatively oriented way of dealing with knowledge creation. Our first defined step of *enabling* was directed towards allowing sales employees to „understand the essential nature of the particular situation in which (a product) sells or does not sell“ (Nonaka, et al., 2008, p. 143). All the propositional, representational, narrative, and tacit input provided by the SEJ environment, combined with the guiding instructions of actively considering different perspectives, were directed towards developing an understanding of the situation in order to generate sales hypotheses, i.e. to generate knowledge claims towards future sales. The features of *inclusion* and *multi-perspectivity* were all about to maximize and multiply organizational distinctions.

But this is not the final result of the knowledge creation process. Knowledge is not merely a subjective distinction. Knowledge is connected to truth (for rationalistic epistemology) and/or to aims of a community (for social and organizational epistemology). At SEJ the emergence of a new subjective hypothesis - by an individual organizational actor - is essential and indispensable, but not enough. Hypothesis creation is only the first step, since the hereby created „subjective insights“ need to be „verified objectively through hypothesis building and testing“ (Nonaka, et al., 2008, p. 144). Just like rationalistic epistemology differentiates between belief and knowledge, and social epistemology between content and knowledge, at SEJ a hypothesis first is an *organizational distinction* which has to survive critical discursive interaction and verification in order to become *organizational knowledge*. And it is the aim of SEJ (as it should be for any knowledge-sensitive organization) to design an environment which fosters not only the emergence of distinctions but especially that of

knowledge. This constraining task of SEJ's items-management is realized within the hypothesis-circle.

But how should we understand the latter within our organizational epistemological approach? To answer that question we need to track the two constraining mechanisms of organizational epistemology i.e. *confirmation* (constraining knowledge towards organizational goals) and *acceptance* (constraining knowledge towards organizational structure).

Confirmation: constraining knowledge creation towards organizational goals

In chapter 9 we concluded that - like at any other knowledge creation activity - it is needed to define what it means for something to be knowledge. One traditional (and intuitive) answer is that knowledge has to be „true“. But part II revealed that the criteria of „truth“ alone is not a viable aim for knowledge because it simply is far too abstract:

if „all one wants is (...) truth, why not count the number of bottle caps one can lay down between Los Angeles and San Diego or between Minneapolis and St. Louis?“ (Longino, 2002, p. 176)

This forced us to connect knowledge creation not with some universal idea of truth but with specific aims of specific communities (chapter 7). It turned out that criteria of knowledge creation need to be *contextualized* to the aims of a community, just as a good map depends on for whom and for which purposes the map is meant to serve. The implication for organizational knowledge was to connect knowledge-creating activities to aims and goals of the organization (chapter 9.3). But to which goals is knowledge creation contextualized at SEJ?

First, on a very general level, the knowledge creation environment is connected with basic SEJ values and philosophy. This is achieved by disseminating four basic rules (and their more detailed descriptions) throughout the organization, especially into the store environment:

„Offer the freshest products,

Never run out of stock,

Provide friendly service,

Keep stores clean and bright.“ (Nonaka, et al., 2008, p. 149)

All organizational action has to (directly or indirectly) be dedicated to these basic goals. This is of course also true for knowledge creation: general goals guide and constrain knowledge creation, i.e. they (co-)determine how hypotheses should look like. For instance, criteria for selecting which product to order ought not only to be the price (or margin) but also freshness („offer the freshest products“). Furthermore, a new order hypothesis should prefer products which can be handled easily without making a mess („keep stores clean and bright“). Or, the quantity of orders should be determined by taking a possible out-of-stock situation into account („never run out of stock“).

Hence, we are not only dealing with knowledge (hypotheses) as a source of organizational action (item ordering). We are dealing with distinction-making which has to be constrained to basic goals of the social context in which knowledge creation is embedded in. In this case: the goals of SEJ. Thus, it is a central aim of successful knowledge management to permeate the knowledge creation space with these goals (at SEJ, this dissemination of goals is implemented via a specific meeting-culture which will be discussed above).

Second, at a more concrete level, there are specific goals for sales work. Here, one main goal is to „reduce opportunity costs“, i.e. costs which occur through not offering products customers are looking for.

At a more local level, sales employees have to take sales targets into consideration when making their decisions. They also have to implement SEJ campaigns. An important aspect here is that these more concrete goals very much depend on local circumstances. SEJ is a large franchise system with thousands of stores spread around the whole country. Hence, there are not only global targets and campaigns, but also local ones. Even single stores are able to rollout own campaigns. Thus, concrete goals of campaigns, which have to be taken into consideration for making orders, are not globally the same for all knowledge creating actors. This is a typical example for the local embeddedness of

knowledge creation criteria: the SEJ knowledge creation environment is split to various „local epistemologies“ within local communities (see chapter 7.8). This implies to provide channels and venues for both global organizational goals as well as for local ones.

But how does SEJ manage to incorporate its goals to the knowledge creation environment? First of all, there is awareness at SEJ that these (both general and specific) goals are important factors to which knowledge creation has to be aligned (i.e. „constrained“) to. Therefore, the store environment is constantly connected with both general as well as with more specific goals. The organization puts significant efforts to let knowledge about goals spread across the thousands of (fluctuating) store employees, between store managers and FCs, between FCs and SEJ’s general management, and so forth. This communication is realized by textual or other representational form, for instance, via written instructions, or information on POS terminals. It is furthermore communicated via intense and thorough face-to-face interaction at different hierarchical levels of the organization (see chapter 10.1.3).

One venue of this face-to-face communication is the „FC meeting“ with all FCs and with SEJ management attending. These extensive summits not only deal with actual campaigns. They also provide an intense and deep communication platform where participants share success stories and thematize the fundamental way of thinking and the philosophy of the organization¹⁵⁵. According to Nonaka et al., this creates a „most important place for mutual understanding“ (Nonaka, et al., 2008, p. 147).

Another important venue is the communication between FCs and stores (owners and employees) taking place at „store meetings“. Each FC is responsible for 8-10 stores and visits each of them twice a week. The FC offers advice about ordering, company policies, sales campaigns, and new products. S/he teaches sales techniques and provides overall support. During the face-to-face meetings on the spot the FC also introduces best practices by communicating

¹⁵⁵ We need to critically remark that these meetings seem to be based on a top-down character, i.e. communication is mainly directed from the management (chairman) down to the approximately 1.600 FCs attending. See the upcoming chapter 10.3.3 for further critical discussion on this issue.

success stories. In our terms, the FC continuously evaluates and updates both organizations goals and organizational structure, thus constraining the knowledge creation environment.

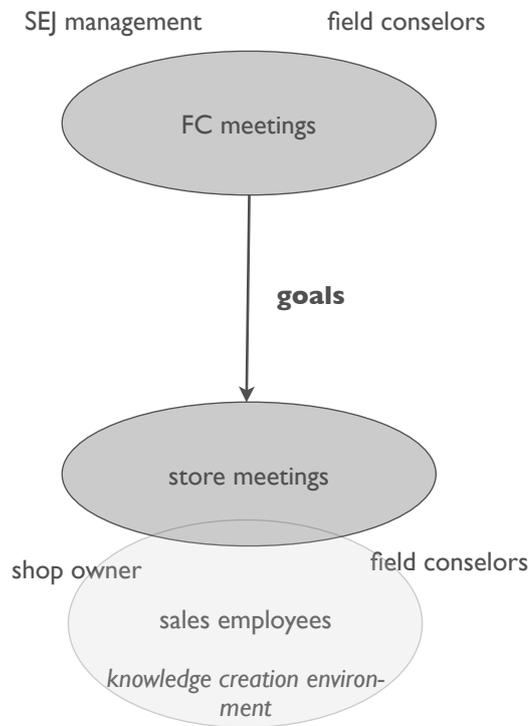


Figure 10.7: The two most important venues of goal communication at SEJ: FC meetings and store meetings

Acceptance: constraining knowledge creation towards organizational structure

As formal organization, SEJ not only provides goals but also a structure directed towards the fulfillment of these goals. This has already been highlighted at the discussion of the feature of „transparent standards“. Creation of new knowledge is not performed fully arbitrary but has to occur within organizationally structured paths, especially along the workflows of the POS system.

First, the content of an order is constrained to which products are available, or how many of these products can be ordered. Similar to our nurse (see chapter 1.3.3) should be dealing with health issues of her patients, also at SEJ

only those products may be part of item ordering which actually are available¹⁵⁶.

Second, the way how to enter a hypothesis into the system, how to make a new order, or how to check the effects of a recently made order, is standardized and constrained. This constraining of knowledge creation is *not* only because SEJ is an organization (and as such structured). The reason is also epistemological: if there would be no structure for creating and evaluating hypotheses, then the standards by which hypotheses are to be evaluated would be arbitrarily set up by any actor individually. Hence, there would be no shared ground on which it would be possible to accept a hypothesis. The method of accepting a sales hypothesis would then depend on the idiosyncratic and subjective evaluation of individuals, instead on a common organizational structure.

What makes SEJ's item-management so special is not that it is structured, but that it is specifically structured as a knowledge creation activity. Item-management is seen not only as organizational activity of individuals. It is seen as knowledge creation, structured as acceptance-process within the routines of hypothesis generation and verification. Just like our nurse, who needed to orient her knowledge creation to given structures of the hospital (see chapter 1.3.3), also SEJ employees cannot (and should not) ignore provided organizational structures.

Acceptance and Confirmation: turning distinctions to successful knowledge

Confirmation and acceptance are realized via organizational goals and organizational structures, thus constraining knowledge creation. This creates an environment in which distinction-making is not only enabled but also normatively constrained. Constrained towards standards upon which a critical discourse can accept (or not accept) and confirm (or not confirm) knowledge claims. At SEJ's item-ordering process, knowledge creation is both embedded in acceptance

¹⁵⁶ Of course, one could bring in the idea to allow employees to make new suggestions for not yet existing products. But this also would have to happen in a structured way.

processes (especially via the hypothesis verification structure) as well as in confirmation processes (especially via the connection to goals).

Figure 10.8 summarizes that SEJ not only *enables* an open space to let actors construct knowledge claims (hypotheses) within a wide range of perspectives but also *constrains* that creation towards organizational goals and structures.

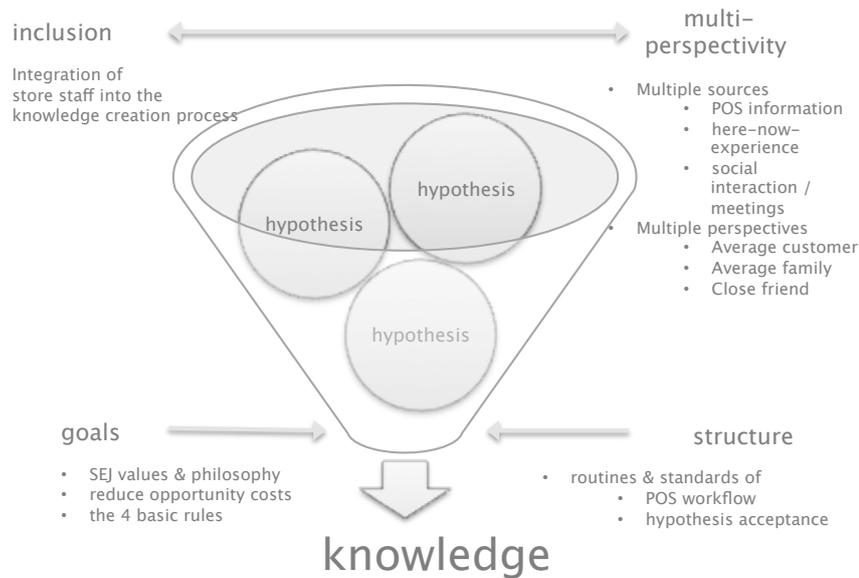


Figure 10.8: The organizational epistemological guidelines of enabling and constraining at Seven-Eleven Japan

The combination of enabling and constraining provides an organizational environment which nurtures knowledge creation in our normative epistemological sense. It of course not guarantees the results always to be „true“, nor does it allow the organization to separate true from false knowledge (or knowledge from mere distinctions) with full certainty. But the implementation of enabling and constraining guidelines shapes an environment where creation of organizational distinctions is geared towards our normative understanding of knowledge. The organizational field of SEJ is configured in a way which guides knowledge creating actors towards the (from our point of view) more holistic concept of knowledge, i.e. a concept of knowledge which is normatively laden (in contrast to the undifferentiated descriptive view which sees knowledge as anything that allows action, and/or as any practically related distinction).

SEJ's extraordinary success in regard to knowledge management (and beyond) is not sufficiently explained because of its fancy IT structures (Nonaka, et al., 2008, p. 143). It is because SEJ manages to design an environment which main attributes are tuned to the main features of a normative concept of knowledge. The understanding of the latter is based on social epistemology, i.e. on the (in our view) most comprehensive philosophical reflection on knowledge. The SEJ use-case shows that to base the design of an organizational knowledge creation environment on the social epistemological understanding of knowledge, i.e. to base the design on „critical discursive interaction“ („enabling“) and on a communities aims and standards („constraining“), leads to positive results. Not only in terms of a philosophical understanding of knowledge but also in terms of organizational success.

10.3.3 „Reflecting“ at SEJ

Because our normative epistemological point of view was based on the idea that not any organizational distinction inherently is qualified as organizational knowledge, we introduced the second guideline of „constraining“. Distinction-making then not automatically results in *knowledge* but initially is only a *knowledge claim* (like a sales hypothesis). In order to reach the status of knowledge, a claim has to be accepted and confirmed.

As we saw at SEJ, constraining is realized by aligning knowledge creation with organizational routines like the hypothesis-cycle and POS system as well as with global and local SEJ goals and objectives. But are these guiding principles permanently scrutinized and reflected? Is there awareness about the fact that critical knowledge creation also involves to evaluate the aims (goals) and standards (structures / routines) themselves on a „second order discourse“?

First, let us consider what „reflection“ would mean within SEJ item-management and how it could look like. Then we will evaluate whether this is actually happening at SEJ.

Reflection would demand a space where both (a) the workflow of the knowledge creation process (i.e. what we called „structure“) as well as (2) the

driving objectives, values, and vision (i.e. what we called „goals“) can be critically scrutinized and questioned. A second-order (or second-loop) discourse ought to be situated at a meta-level, transcending every-day’s knowledge creation. An appropriate place for this to happen would probably be the communication spaces we discussed in 10.3.2, i.e. the „FC meeting“ and the „store meeting“. According to our third guideline, these meetings seem suitable for reflection, because they not only cover the knowledge creation process itself but also the goals and structures it is based on.

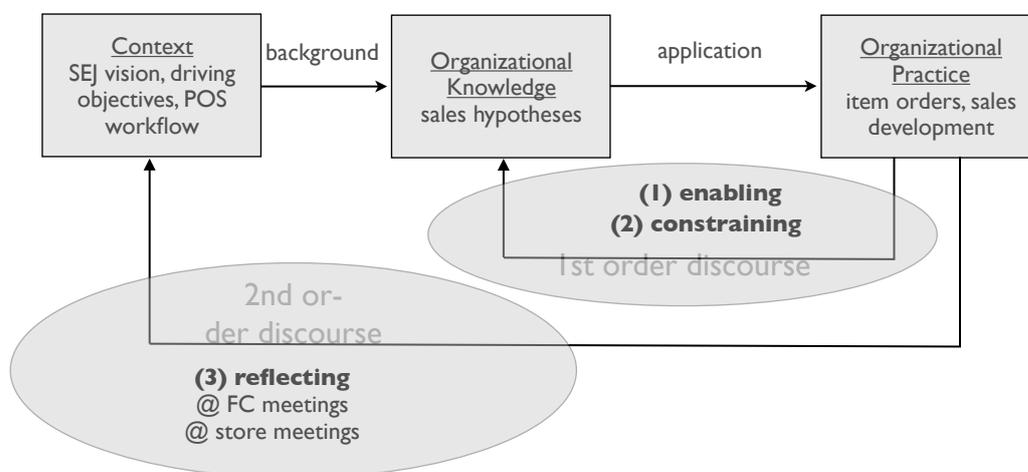


Figure 10.9: FC- and store-meetings as possible reflection spaces at Seven-Eleven Japan

Unfortunately, at this meta-level of reflection, SEJ seems to turn away from the ideas of „mutual“ understanding and „distributed“ leadership. When it is about the basic goals, values, or the standardized workflows in which the hypothesis-cycle is embedded, a classical, hierarchical top-down paradigm seems to be in place. It looks like that both FC meetings and store meetings are rather about to guarantee effective transfer of SEJ values to the employees, than to critically evaluate these principles. On one hand, the way how the POS workflow is structured and which values lie behind it *is* thematized and *is* part of face-to-face communication within the meetings. But on the other hand, principles are thematized only as something that is given and should be taken for granted. In fact, constraining factors like goals and structures are treated rather as something that should be *internalized* than something that should be *criticized*. At FC

meetings the chairman endlessly repeats the „fundamental way of thinking“ and the philosophy of SEJ. But not in order to be critically evaluated. The purpose rather is to be internalized by the FCs (Nonaka, et al., 2008, p. 147). The FCs, in turn, bring these principles to their store meetings with no other aim than to further deliver the goals defined by management to store employees.

Neither at the communication space between management and FCs, nor at the flow between FCs and stores, there seems to be a purposeful reflection on basic goals or structure. Creation and evaluation of these guiding principles seem to be restricted to management and experts at the top of the organizational hierarchy. Hence, although SEJ was a best practice at the guidelines of enabling and constraining, at the guideline of reflection there seems to be need for improvement.

Both FCs and sales employees would be valuable sources for evaluating given routines and goals, because they perform (and/or observe) them day-by-day within local circumstances. Thus, an opportunity to improve knowledge creation at SEJ's item-management would be to distribute reflection and to provide feedback channels from both store staff to FCs, as well as from FCs to SEJ headquarters¹⁵⁷. Such second-order discourse would prepare the organization to be ready for coping with future challenges, since improvement, continuous change, and adaption of the basic principles would be subject to critical discursive interaction. It would allow to enable an open and critical discourse not only about how to successfully create valuable knowledge within the hypothesis-cycle, but also about the hypothesis-cycle itself, as well as about its structures and goals. It would establish an „intelligent organization“ with „routines guiding the modification of routines“ (F. B. Simon, 2007, p. 65).

10.4. Summary and future research

SEJ turned out to be an interesting use-case with regard to almost all guidelines of our organizational epistemology. SEJ showed how to understand and design an organizational activity as knowledge creation activity. To create new knowl-

¹⁵⁷ Remember that this channel already exists: FCs bring in best-practices from their stores to the general FC meeting (chapter 10.1.3). However, this is located at the first-level discourse. And there seems to be no equivalent feedback at the second-order level.

edge claims (sales hypotheses) served as organizational distinction which enabled organizational action (item orders).

In a first step, we analyzed how SEJ designed the items-management environment as a knowledge creation environment, via providing an *enabling* space. Knowledge creation (the construction of knowledge claims as sales hypotheses) was not restricted to management or white collar experts but delegated to all store employees. Besides this *inclusion*, SEJ sales employees were enabled to develop *critical multi-perspectivity*: (a) they were provided with multiple input, like, sales developments, weather forecasts, planned local events, product and campaign information, experience with customers, best practices, and so forth; (b) they have been prompted to take multiple possible customer viewpoints into consideration. Together with continuous access to transparent standards, like the organizations main goals, SEJ manages to allow thousands of actors to participate in knowledge creation.

In a second step the manifold outcomes of distinction-making (i.e. the making of sales hypothesis) was *constrained* to specific criteria. These constraining criteria aligned knowledge creation to the organizations goals and structure.

Unfortunately SEJ seemed not to take any specific measures in order to (in a third step) *reflect* on these goals and structure. With such a second-order discourse in place, the items-management environment would be able to more dynamically cope with fundamental changes occurring both outside and within the organization.

Chapter 11: Summary - A new vocabulary for a normative theory of organizational knowledge

11.1 Organizational Knowledge

11.1.1 The origin of organizing

Our inquiry began with the attempt to philosophically describe the deeper source of organizations. We claimed that to organize is a mode to cope with the radical openness of human existence. As several philosophical positions have pointed out, humans do not simply deal with a pre-given world of readymade, external objects. In contrary, human perception initially faces a chaotic environment of „manifoldness“. What knowing subjects face is an unordered flux of chaos which has to be arranged, structured, organized, and made sense of. It is the internal system of human understanding, the concepts and processes used which enable us to construct distinctions and to distinguish „things“ in the world. This general position was located at early thinkers like Immanuel Kant, as well as at philosophical anthropology, existentialism, or constructivism (chapter 1.3). We summarized that the „*conditio humana*“, i.e. the radical openness of human existence, makes it necessary to make distinctions and to create meaning. A radical openness which forces us to become active designers of ourselves, our world, and our actions. As „thrown beings“ (Heidegger, 1927/1962) we are obliged to participate in the permanent and never-ending „domestication of being“ (Sloterdijk, 2001). How our world and our actions look like is heavily dependent on how we deal with that openness we encounter, i.e. which concepts we use - and how we use them - to „synthesize“ the given „manifoldness“ (Kant, 1781/2003).

Similarly, the organizational theorist Karl Weick claims that the core of organizing lies in „sensemaking“ (Weick, 1995a, 1995b). The construction process of sensemaking begins with „chaos“, i.e. with an „infinite stream of events and inputs that surround any organizational actor“ (Weick, et al., 2005, p. 411). Then actual sensemaking sets in as „labeling and categorizing to stabilize the streaming of experience“ (Weick, et al., 2005, p. 411). Organizations act in an environment characterized by radical uncertainty and complexity (Tsou-

kas, 2005b). They cope both with a hypercomplex external context (changing markets, political constraints, social culture, or emerging technologies) as well as with internal complexity (heterogeneous individuals and collective human actors). This situation forces organizations to develop mechanisms (which we called „concepts“) to reduce uncertainty and to bring order to the chaos of the world. Such sense- and distinction-making is prevalent at all stages of human existence: from the subjective sphere of individuals all the way up to the macro scale of society as a whole. Organizations play an important part in the middle of these dynamics (Kneer, 2001; Luhmann, 1975). And as organizations they are „sense-making“ devices which - on a collective level, mediated by individuals - enable the creation of order out of chaos. Organizations enable to make distinctions and to act, to temporarily escape the senselessness and radical openness of human existence.

11.1.2 Organizational concepts: „rationalized“ & „socialized“

We concluded that an organization is a collective device of distinction- and sense-making, a source of world-construction. But which concepts do organizations use to engage in such distinction-making? Here, we consulted the discipline of organizational studies which offers two general types of such distinction-making concepts: „rationalized“ and „socialized“ concepts.

Organizational scholars who introduced „rationalized“ concepts were inspired by the idea of enlightenment, i.e. that reason and rationality are main vehicles in ordering the world. According to the rationalized paradigm, organizations are seen as formally structured institutions shaped by concepts like hierarchy, roles, rules (Schreyögg, 2008, p. 11), bureaucracy (Weber, 1947), „scientific management“ (F. W. Taylor, 1998 [1911]), and so forth¹⁵⁸.

This approach of organizational studies was criticized as being too narrow (Quinn, 1988)¹⁵⁹. Critics argued that to understand the full range of organizational behavior other concepts have to be taken into consideration. Concepts

¹⁵⁸ Other proponents of this paradigm have pointed out the rational structuration of organizations (Fayol, 1949) and the whole idea of rationalistic management as rational control over organizational activities (e.g. Gulick & Urwick, 1969) .

¹⁵⁹ We also mentioned early critical objections considering „uncertainty“ (Knight, 2006) and „bounded rationality“ (H. A. Simon, 1991, 1997).

which focus on organizations not only as *formal institutions* but also as *social practices*. Practices which cannot be fully put into rationalized patterns or abstract frames. We coined these other concepts „socialized“ and mentioned approaches which emphasize informal structures (Schreyögg, 2008, p. 47), communities (Brown & Duguid, 1991), culture (Dietrich, 2001; Schein, 1992; Smircich, 1983), power (Alvesson & Willmott, 1992, 2003), emotions (Ashkanasy, et al., 2000; Forgas & George, 2001), or narratives (Orr, 1996). They supplement rationalistic approaches, allowing a more holistic picture of the structuring of organizations.

One of our examples was taken from a field study at a hospital (Weick, et al., 2005) and may illuminate the idea of organizational concepts described so far. The field study describes organizational activities of a nurse whose actions are embedded in a set of rationalized and socialized organizational concepts she uses to bring order to the chaotic environment she faces at the hospital. From the „million things that go on“ (Weick, et al., 2005, p. 411) she has to distinguish between the important and the non-important, between which things she turns her attention to and which not, between what she does and what not. This distinction-making is not guided by her own private faculties alone but significantly by organizational concepts: the field study describes how she had to internalize and use given organizational rules, roles, or predefined paths of communication and hierarchy („rationalized concepts“) in order to perform useful action. It also describes how she had to dwell into the specific culture at the hospital as well as how she had to get acquainted with specific language spoken and informal codes used („socialized concepts“). By looking at the nurse use-case we were able to see that both „rationalistic“ (rules, roles, hierarchy) as well as „socialized“ (culture, narratives) concepts contribute to the formation of organizational action.

11.1.3 Organizational knowledge: „rationalized“ & „socialized“

The next step of our inquiry was to show how the driving force behind these organizational concepts is *organizational knowledge*. Our readings of organizational knowledge literature (and knowledge management literature) in chapter 2

prepared the ground for an understanding of organizational knowledge as something which enables organizational actors to make distinctions and to act. Also here we distinguished between „rationalized“ and „socialized“ attempts, namely as „propositional“ and „narrative“ organizational knowledge respectively (Tsoukas, 2005a). Chapter 3 focused on definitions and examples of these two types of knowledge as well as their *application* to organizational practice.

Propositional knowledge appears as formal rules, roles, and routines which ought to be applied by organizational actors. These mostly explicitly formalized categories form a „stock of knowledge“ (Berger & Luckmann, 1969) which shape the subjective distinctions of actors as well as the objective, „institutionalized“ structure of the organization. From such a view, coordinated activity is possible because „individuals draw and act upon a corpus of generalizations in the form of generic rules produced by the organization“ (Tsoukas & Vladimirou, 2001, p. 979). Hence, organizational knowledge can be seen as „theory“ (Tsoukas & Vladimirou, 2001, p. 980) which has to be applied to organizational „practice“. Similar to a scientific theory also organizational knowledge (as propositions) subsumes heterogeneous particulars under generalized concepts.

Narrative knowledge, on the other hand, provides a form which allows to condense, retain, and distribute contextualized, practical knowledge throughout the organization (Tsoukas, 2005a)¹⁶⁰. Narratives are centered around relevant events of organizational practice, manifested in stories, anecdotes, best-, or worst-practices. Although not constructed as rules, narratives are very powerful in guiding organizational action (Orr, 1996; Tsoukas & Vladimirou, 2001, p. 980ff.). This is because they are more flexible since they solve problems not by following exact rules („if-then“ logic) but by re-contextualizing former occurrences to an actual situation („as-if“ logic).

¹⁶⁰ but also e.g. (Boland & Tenkasi, 1993; Czarniawska, 1997; Geiger, 2006; Orr, 1996; Schreyögg & Geiger, 2005)

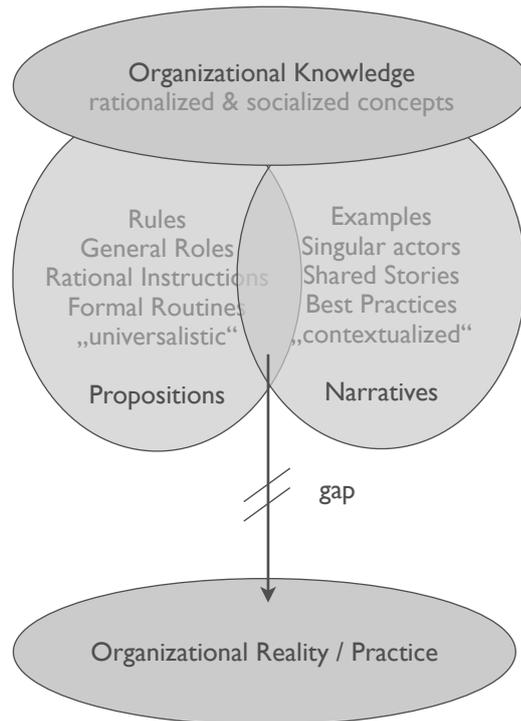


Figure 11.1: „Organizational concepts“ as basic elements of organizations

11.1.4 Organizational distinction making: representation, meaning, and action

Besides the dualism of propositional and narrative knowledge we added another important set of terms to our theoretical toolkit.

First, we suggested a „strong view“ on knowledge in chapter 2, starting with readings from sociological theory. Hereby, we said that knowledge generally constitutes the epistemological dimension of a social field because it enables actors to make distinctions in order to understand their world and to act in it (Bourdieu, 1986; Giddens, 2008). This opened up the possibility of a „strong“ knowledge-based view which sees knowledge not only as a „commodity“ or „resource“ but as a founding element of any social field.

Then, we defined *organizations* as social fields in which knowledge as distinction-making is active on three levels: *representation*, *meaning*, and *action*. These three levels of distinction-making were derived from a connection of the knowledge management triad „data-information-knowledge“ (Boisot, 1995; Nonaka & Takeuchi, 1995; Probst, et al., 2002) with semiotics (Morris, 1946; Peirce, 1913; Saussure, 1959). Organizational distinction-making can be

located in *representations* (the syntactic dimension; encoded artifacts like e.g. text, instructions, computer data), in *meaning* (the semantic dimension), and in relation to *action* (the pragmatic dimension). These three levels are *transitional facets on a continuum*. A continuum which is marked by the scope of contextualization of distinction making, and where also the two types of organizational knowledge, i.e. propositional and narrative knowledge, can be located (see figure 11.2). Thus, we receive an interrelated set of terms which can be used as template to analyze knowledge in organizations:

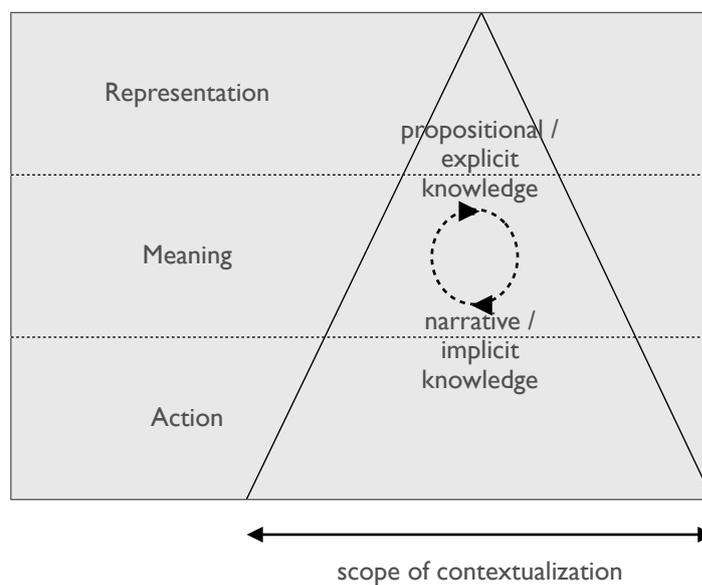


Figure 11.2: Levels of distinction-making and types of organizational knowledge¹⁶¹

Propositions tend more to be discovered in explicit form at the level of representations, whereby narratives are more grounded in everyday's action. However, both forms of knowledge also operate on the other levels: propositional knowledge is taken up by actors as meaning and then connected to action; and narratives can be explicated to representations, e.g. as written best-practices.

In our example from the hospital, the organization offers syntactical distinctions on the level of *representation*, i.e. official instructions about behavior, responsibilities of nurses, their hierarchical position, command- and communication-lines (but also narratives are present on the level of representa-

¹⁶¹ inspired by (Tsoukas & Vladimirou, 2001, p. 976)

tion, e.g. as best-practices-reports, or as noteworthy stories of former patient treatments stored in the collective memory of hospital employees). On a semantical level nurses create inter-subjectively shared distinctions which make sense of those representations and their possible relation to practice. Finally, nurses relate these meanings to their specific context in order to perform *action* (the pragmatic level).

Figure 11.2 also indicates that we should put emphasis not only on the differences, but also on the similarities between propositions and narratives. Both types of knowledge enable organizational actors to draw distinctions and to make sense of the chaotic flux of their world; both types appear as *representations, meaning*, and relation to *action*, and allow to temporarily bring order to chaos. Just as propositional knowledge, also narratives may be seen as „a way of appropriating order from disorder and therefore can be connected to dynamics of knowledge creation“ (Patriotta, 2003, p. 193).

11.1.5 Organizational knowledge creation

The last part in order to complete our understanding of „organizational knowledge“ was to take an closer look at knowledge creation. Chapter 4 showed that knowledge is not a rigid stock but a continuously reconstructable flow. Similar to scientific knowledge creation, it is the experience of new phenomena and problems which let knowledge creation emerge. Organizations create new knowledge as they adapt to a changing (internal and external) environment. This happens when existing (propositional or narrative) knowledge is not sufficient, i.e. when the organization encounters problems which cannot be solved with the currently available stock of knowledge. Such „perturbations“ trigger the creation of new solutions (Patriotta, 2003, p. 183) and adapt rationalized and/or socialized knowledge to the new situation. We interpreted such knowledge creation processes as learning processes within „single“ and „double“ loops (Argyris, 1976, 1977; Argyris & Schön, 1978).

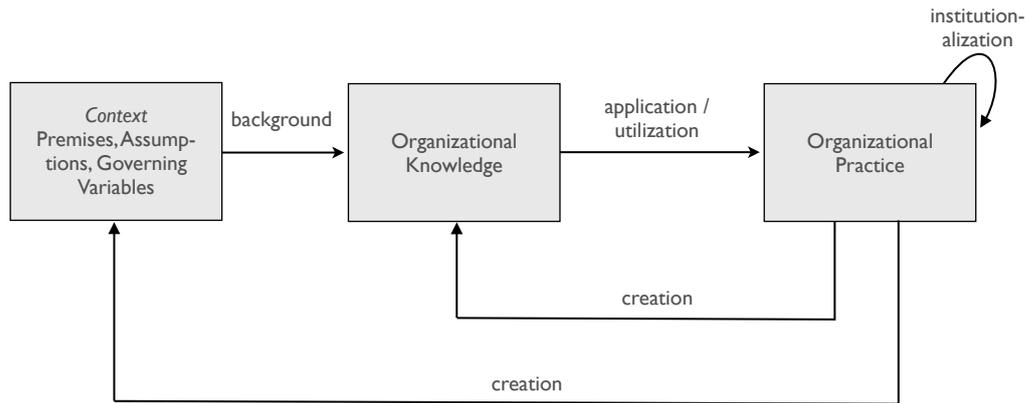


Figure 11.3: Organizational knowledge creation (and application), according to the models of „knowledge cycle“ (Patriotta, 2003) and „organizational learning“ (Argyris & Schön, 1978)

Using the vocabulary of the „techno-science-approach“ (Patriotta, 2003, p. 43), we described knowledge-creation as embedded in complex „actor-networks“ (Callon, 1986; Latour, 1983, 2007; Law, 1992). We interpreted field studies conducted by Gerardo Patriotta (Patriotta, 2003) and concluded that knowledge creation is an open and controversial process („becoming“) which results in temporarily stable outcomes („being“) like, e.g. instructional blueprints (propositional knowledge) or guiding stories (narrative knowledge). As „black boxes“ they become part of the applicable organizational knowledge stock since they have been „translated“ to a settled, accepted, and stable state. Knowledge then is „utilized“ and „institutionalized“ as it gets more and more integrated into daily practice. In this state, knowledge can be understood as applicable black-box which blurs and hides the internal mechanisms, its history, and its contingent character. Of course, the stable character is only temporarily given. At the moment black-boxes have to be reopened (e.g. due to breakdowns in practice) the next contingent knowledge creation process is triggered.

11.1.6 The constitutional gap of organizational knowledge creation

The open-ended and contingent character of knowledge creation revealed a general gap between knowledge and organizational practice. It revealed a tension between the situation in practice and the knowledge which finally is created. Problems in practice may trigger knowledge-creation but do not fully de-

termine its outcome. Knowledge-creation is an open-ended process of *becoming* which is heavily contextualized and dependent on heterogenous actors, background assumptions, and so forth. This was already prevalent in chapter 3, where we examined the *application* of organizational knowledge. There we saw that propositional knowledge (as rules, routines, roles, or other distinctions) operates with generalized categories which have to be applied to the concrete organizational practice. Those categories are concepts located in a fundamental tension („gap“) to its particular context of application, because how actors apply a category may vary from actor to actor, from situation to situation. This was indicated by the Wittgensteinian insight that in general the content of a rule does not determine its use (Barnes, 1995, p. 55; Tsoukas & Vladimirou, 2001, p. 980f.; Wittgenstein, 1953/2006). The use is up to the interpretation and contextualization of organizational actors who ultimately have to bridge the gap between knowledge and practice. Organizational knowledge does not determine how it is interpreted and practically applied because of the intrinsically open-ended and ambiguous nature of knowledge itself (a claim which was later verified in our philosophical-epistemological reflections). This is why we stated that *the application of organizational knowledge is underdetermined by its propositional content*. A general epistemological gap separates knowledge and its application.

Narrative knowledge, on the other hand, does not close that gap. Though non-abstract and contextualized, narratives are „templates“ (Patriotta, 2003, p. 164) and part of the available stock of organizational knowledge. Narratives „help to conserve and mediate individual experiences and can be used as background knowledge when experiencing novel situations.“ (Rögnvaldur, 2006, p. 348). Hence, narrative knowledge, just as propositional knowledge, is intended to be a reusable concept which ought to enable actors to cope with future situations. From this point of view narratives are „dynamically“ generalized concepts (Tsoukas, 2005a, p. 83) and, similar to propositional knowledge, counterparting heterogenous practice. They do not not eliminate underdetermination, but offer another way in dealing with it; they use „analogy“ instead of „iden-

tity“: or, as mentioned before, more an „as-if“ logic instead of an „if-then“ logic (Tsoukas & Hatch, 2005).

In chapter 4 the epistemological gap more clearly came to light. Maybe because we examined the knowledge process from the other direction, i.e. not from knowledge to practice („application“) but from practice to knowledge („creation“). Unlike from the other direction, we did not start from the open-endedness of knowledge and its relation (application) to practice. We started from the organizational practice, from where knowledge creation is triggered (e.g. through perturbations or breakdowns) as a controversial and open-ended process. From the viewpoint of creation there is a gap between knowledge and practice because the construction process emerging out of the practice does not follow a predetermined path. Knowledge-creation and its outcome is open to a contingent set of possibilities. Possibilities which are blurred and finally hidden in organizational concepts as „black boxes“. This reveals another dimension of what we called the „underdetermination problem“¹⁶² in organizations. It stems from the fact that the situation which triggers knowledge creation cannot alone determine which solution is the definitive one. Just as application of knowledge was no trivial execution of rules, also creation of knowledge is an open process. Problems in practice may trigger knowledge-creation but do not fully determine its outcome¹⁶³.

To conclude, organizational knowledge as distinctions (at the levels of representation, meaning, and action) is not 1:1 interlocked with concrete organizational practice. This view was supported by the characteristics of knowledge application in chapter 3. It was also supported by our discussions on knowledge

¹⁶² A term taken from epistemology and philosophy of science (Duhem, 1954; Longino, 2002) and which played an important role for the development of an „organizational epistemology“ in part III of this inquiry.

¹⁶³ Some authors explain this by referring to the „equivocality of action“, i.e. that we have to focus on the processual and controversial character of knowledge because organizing is constituted by action, and action is per se equivocal and in permanent flux (Cooper, 1998; Patriotta, 2003, p. 200ff.). But our attempt showed that equivocality of knowledge is rooted deeper, i.e. in the concept of knowledge itself (part II); not only „action-knowledge“ but knowledge in general remains in a permanent tension (or „gap“) between abstract and concrete, between theory and data, between generalizations and particularities, between organizational distinctions and organizational practice.

creation in chapter 4. The result of knowledge creation is not simply the objectively best practical solution of a problem in practice, but is open to contingency and plurality. How the final shape of the blueprint looks like, or how a story becomes „noteworthy“ within the organization, is no mechanical selection process but a translation within complex actor-networks. Knowledge creation is embedded in a social environment with heterogenous actors and contextualized background assumptions. Therefore, just as the *application* of knowledge to practice is not fully determined by the knowledge's content (chapter 3), the *creation* of knowledge is not fully determined by practice (chapter 4).

11.1.7 Organizational Knowledge: a theoretical toolkit

In part I our attempt was to provide a theoretical framework (a theory of „organizational knowledge“) as a basic terminology which can be used to structure and interpret empirical field work, as well as to offer structuring- and analyzing-support for the „reflective practitioner“.

Let us shortly conclude the basic terms of this theoretical toolkit: our framework understands organizational knowledge as a mode of distinction-making on the three levels of representation, meaning, and action. A mode of distinction-making, ultimately driven by the radical openness of the human condition which makes it necessary to create distinctions in order to make sense of the world and to act in it. In organizations this is accomplished by the creation and application of knowledge which can be classified within a spectrum between „propositional“ and „narrative“. The former designates a formal and explicit level which can be found as official directives, rules, or roles. The latter designates an informal and more implicit level, which can be found as sedimented memories, noteworthy situations, best-practices, or circulating stories. Both types of knowledge enable organizational actors to create distinctions on the three different levels of representation, meaning, and action. Furthermore, knowledge on all levels and of all types is situated in a tension (a „gap“) to the actual organizational practice. Problems, failures, breakdowns, „perturbances“, or other events which occur in organizational practice, may trigger knowledge-

creation loops whereby the existing stock of propositional or narrative knowledge is adapted, renewed, or sometimes even totally revolutionized.

Our inquiry not only defined this theoretical toolkit but also tried to apply it. For this we focused on a use-case from the Japanese company „Seven-Eleven Japan“ (SEJ)¹⁶⁴. Using terminology and concepts of the theory of „organizational knowledge“ from part I we interpreted the items-management process of SEJ in chapter 10.2. Item-management is an organizational process which determines which goods have to be ordered at which time to which store. There we saw that organizational knowledge (e.g. items-sales-data, or sales-hypotheses) enables organizational actors (SEJ store staff) to make distinctions in order to perform action (to carry out item-orders). Organizational knowledge was described as *representational* data from the POS (point-of-sale) system, e.g. as product information, sales data, information about local events, weather reports, and so forth. On the level of *meaning* distinctions are made by the interpretation of sales-data or customer behavior, and generally by the intersubjective combination of all data gathered via the item-management-system and face-to-face communication. Finally, these distinctions trigger concrete action and are related to the practice of item-ordering at every one of the 12.000 SEJ stores in Japan.

¹⁶⁴ (Nonaka, et al., 2008, p. 138ff.)

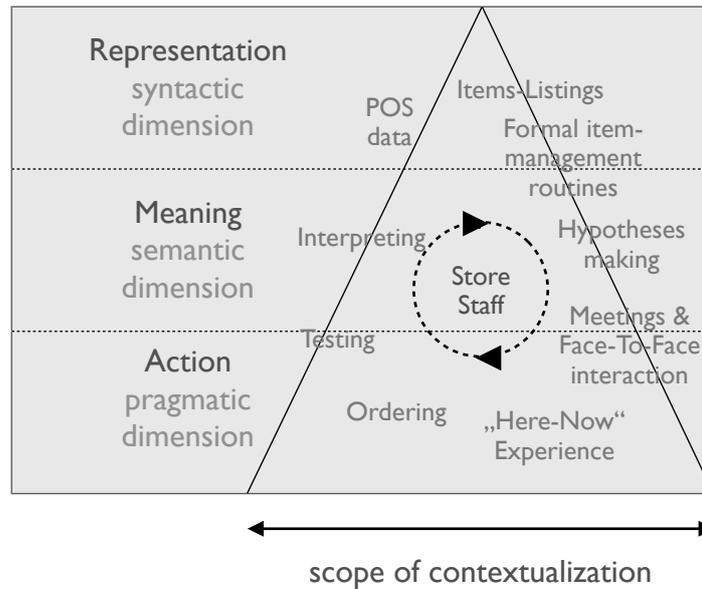


Figure 11.4: The triadic structure of organizational knowledge applied to item-management of Seven-Eleven Japan

We also detected both types of knowledge: formal, *propositional* knowledge (like e.g. sales data and instructions how to use the POS system) and *narrative* knowledge (like e.g. best practices communicated during meetings, or experienced „here-now“ situations from interaction with customers „on the spot“). Also prevalent was a gap in which the process of knowledge-creation was located. At SEJ the gap between knowledge and practice can be observed when new sales-hypotheses are generated which then result in item-orders. In our terms: when organizational knowledge (sales-hypotheses, together with all other distinctions related to it, like best practices, meeting-protocols, product information, etc.) is applied to it heterogenous (and open-ended) particulars, i.e. to organizational practice (see figure 11.5).

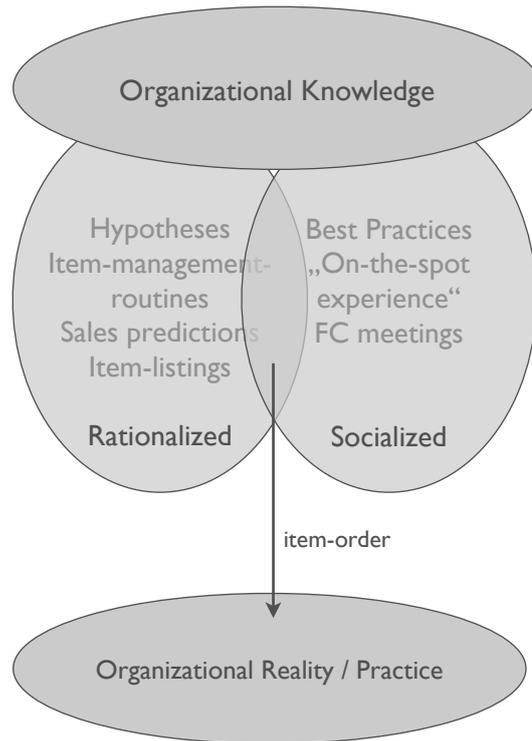


Figure 11.5: Rationalized & socialized organizational knowledge at Seven-Eleven Japan

The gap appears within item-order activities since we never know if the knowledge which led to the item-order will fulfill its expectations. We do not know how that piece of organizational knowledge will be applied to organizational practice and what effects it is going to determine. We do not know for certain if the items-order (and its backing sales-hypotheses) remains as relevant organizational distinction. But it is very likely that if a hypothesis is not performing the way it should, sooner or later the black-box will be re-opened and new hypotheses building (i.e. new knowledge creation) has to be performed; then a „new spiral of knowledge creation is triggered“ (Nonaka, et al., 2008, p. 151). Creation and application are interchanging events revolving around the gap between knowledge and practice. The gap is the moving force which continuously initiates new attempts of knowledge creation.

11.2 Organizational Epistemology

11.2.1 Normative distinctiveness

Our theoretical framework in part I described organizational knowledge creation (and application) as open-ended process which final shape is never predetermined. Similar to science, particularities (organizational practice) are subsumed under generalizations (organizational knowledge). And, again as in science, there is no ideal, unequivocal, or purely rational-determined way from particularity to generality. With this „underdetermination problem“ (at least implicitly) in mind, organizational studies are motivated to reveal socially embedded creation processes and to locate the involved factors which finally lead to institutionalized knowledge. This is, to open black boxes, to analyze their contingent inner constitution, to trace their history, and to describe how they became what they are. Such descriptive studies of the dynamics of organizational knowledge have been our main references so far. We have discussed not only theoretical terms but several field studies: at telephone call centers (Tsoukas & Vladimirou, 2001, p. 980ff.), car factories (Patriotta, 2003, chapters 4-7), or retail stores (Nonaka, et al., 2008, p. 138ff.). We have seen how these field studies attempt to empirically detect as well as to theoretically understand the making of black boxes, the creation of knowledge, and its application to organizational practice.

Notice the consequence for our grounding concept of knowledge. In part I anything was coined „knowledge“ which fitted into our descriptive framework, e.g. propositions or narratives. But this understanding neglects a central feature of knowledge. A feature which has been discussed in western epistemology since Plato, and proposes to take a *normative viewpoint* on knowledge. A viewpoint which has widely been ignored by organizational studies and knowledge management literature (Schreyögg & Geiger, 1997, 2005). A viewpoint which understands knowledge as more than something that is created, applied, or transformed; which understands knowledge not only as a process or content, but as a *claim*: knowledge inherently *claims to be valid* (Adams, 2004, p. 228; Habermas, 1984; Schreyögg & Geiger, 1997, p. 83), it *claims* to be true vs. false, it *claims* to correspond to reality vs. being an illusion, it *claims* to be

knowledge vs. mere belief. In chapter 5 we backed this hypothesis by daily experience: to *believe* something (often) is something different from *knowing* it.

This other view on knowledge opened a desideratum for our further inquiry. It introduced an attempt not only to examine knowledge as descriptive fact but to formulate normative criteria qualifying knowledge versus non-knowledge. In other words, we do not only want knowledge to make distinctions, we want knowledge to make *right* distinctions. Therefore, in chapter 5 we stated that if we seriously want to operate with the notion of „knowledge“ then we also need to be interested in what makes knowledge to be true, good, or useable. What makes it to be not a mere belief, not mere content, not a mere distinction? What interests us beyond *epistemic attributes* (what knowledge *is*; types and levels of the appearance of knowledge) are *epistemological criteria* (what knowledge *ought* to be; and by which criteria something is justified to be so). When we focus on the latter, in science we may ask: what should make a particular theory more appropriate than another? Or in organizations: what should qualify an organizational concept (propositions or narratives) in becoming part of the stock of knowledge of an organization? Descriptive approaches would state (driven by the epistemological gap and the underdetermination problem) that this question cannot be answered a priori and is fully contingent to what is happening „on the ground“. All we can do is to observe knowledge formation-, utilization-, and institutionalization-processes, and their determining „real world“ factors. This descriptive view is a legitimate research program but, standing alone, only at the price of epistemic relativism. Knowledge is then anything put into place, no matter if by force, unreflected practice, accident, or luck. As long as some organizational concept provides distinctions for organizational actors it ipso facto is knowledge. From this descriptive approach we may interpret this or that as knowledge; we may interpret this or that knowledge leading to successful results at this or that organization; and we may even induce some general findings. But we have no founded general criteria which would guide normative evaluation or practical design of knowledge creation environments.

In search for such criteria we came up with the hypothesis that *philosophy* (within its branch *epistemology*) may provide a basis for normative epistemological criteria for organizations; criteria which are not derived from some empirical cases but founded in the notion of knowledge itself¹⁶⁵. Notice how this foundation may not only be useful for philosophers but also for organizational scholars and practitioners who are interested in what makes good, or appropriate knowledge, what makes the difference between „high“ and „low-quality“ knowledge (Schreyögg & Geiger, 1997, p. 94). Hence, we have been interested not only in *epistemic attributes* of knowledge (the „descriptive view“ / „theory of organizational knowledge“, part I) but also in *epistemological criteria* (the „normative view“ / „organizational epistemology“, part III).

11.2.2 The return of philosophy in knowledge management: rationalistic and social epistemology

The link from a theory of *organizational knowledge* to an *organizational epistemology* may be bridged by the philosophical discourse of *epistemology*. The latter can be understood as a normative project which tries to formulate reasonable conditions for something being knowledge versus being a mere belief (or something else). Hence, our hypothesis was that epistemological criteria developed for knowledge (in general) may also guide the definition of epistemological criteria for organizational knowledge.

In chapter 6 we coined the traditional attempt (which started with Plato and holds a strong tradition especially in the anglo-american philosophical discussion) „rationalistic epistemology“. It tries to provide rational and universal criteria to determine with certainty under which circumstances a belief is knowledge, or not (Steup, 2005). In short, it states that a belief has to be *true* and *justified* (Sosa, et al., 2000). Of course, there has been much discussion about what „truth“ and especially what „justification“ means. We gave a short overview of that discussion in chapter 6 but then turned to the so called „Gettier problem“ (Gettier, 1963). The latter basically shows that, no matter how something is being justified as true knowledge, there always remain cases where

¹⁶⁵ See our first research question and hypothesis defined in chapter 5.4.

something by definition is both justified and true but still cannot be knowledge. We will not follow that argument here (for this see chapter 6.3) but we can summarize its consequences. One consequence was that a final definition of universal criteria of knowledge is problematic because knowledge always refers to a unequivocal meaning. That is because knowledge always - to a certain extent - is a generalization subsuming particularities: similar to organizational knowledge (chapter 2), also knowledge in general is related to a *potentially open-ended plurality of its subsumed particulars* (like e.g. in the famous knowledge claim that „all swans are white“¹⁶⁶). Knowledge as generalized concept always transcends - and is underdetermined by - its particulars. This is why all knowledge is open to „falsification“, but also why no list of universal-rational criteria of knowledge can be complete (Zagzebski, 1994). Here we encountered a logical gap between justification and truth which marks a characteristic of any knowledge claim. There always remains a gap between a knowledge claim and its intended meaning, i.e. its particularities.

Our analysis showed: it is both our world as well as our concepts about the world which are open-ended and dynamic (see chapter 6.4 and 6.6, as well as our reflections on the duality of organizational knowledge in chapter 3.2.3). The „inescapability“ of the Gettier problem demonstrated that also rationalistic epistemology cannot avoid the „open-endedness of concepts“ which we already discovered at organizational knowledge. But this also implies that normative-rationalized criteria based on the traditional concept of „justified true belief“ cannot provide enough criteria to qualify successful knowledge creation. Regarding to, e.g., scientific content this means that rules of logic, rational reasoning, or its correspondence with reality, are not alone able to determine the distinction between (scientific) knowledge and non-knowledge (Duhem, 1954; Longino, 1990; 2002, p. 124ff.).

In chapter 7 we discussed the work of Helen Longino who states that the above mentioned problems of rationalistic epistemology (the „rational approach“) lead to a reaction which neglects the possibility of an normative-epistemological approach at all (Longino, 2002). This „social approach“ is

¹⁶⁶ (Popper, 1959)

(similar to the discussed authors of organizational studies) driven by a descriptive paradigm. Instead of defining an a priori normative concept of knowledge they focus on the social context of knowledge creation, i.e. observable, empirical, „real-world“ processes of knowledge production. These processes are not located in individualized cognitive agents, but rather in communities. Knowledge then is created in institutions and groups, lead by various interests, aims, and goals (Barnes & Bloor, 2000; Collins, 1983; Knorr-Cetina, 1981; Latour, 1983). For the defenders of the social approach, rational or normative criteria have no privileged status because knowledge-production can be determined by any „processes or practices that succeed in fixing belief or in having some content accepted in some community“ (Longino, 2002, p. 84). But without any normative criteria the social approach can only tell us something about what is empirically observable in scientific communities.

Longino describes the relation between the „rational“ and the „social“ approach as „dichotomy“: „rationalizers“ pursue a normative account but narrow their view in excluding the social context of knowledge creation; „socializers“ consider the social embeddedness of knowledge creation but exclude normativity (Longino, 2002, chapter 1). Longino’s attempt is to unite both sides in order to retain the normative *epistemological* project but to do so within the *social* context of knowledge creation, i.e. to come up with a „social epistemology“. According to Longino, not only *rationalized* but also *social* normative criteria are needed to guide knowledge creation processes. In other words, also the social can (and has to) be rational in regard to epistemic effectiveness. To „dissolve“ the dichotomy between the „rational“ and „social approach“ Longino suggests to embrace the idea of the social construction of knowledge but to overcome its relativistic and merely descriptive stance. Connecting social contextualization of knowledge production (social approach) with epistemological normativity (rational approach) could turn epistemology into a „normative theory of social knowledge“ (Longino, 2002, p. 122).

This is basically done by understanding knowledge creation as necessarily dependent on the purposes it ought to serve within a specific community; the analogy to map making (chapter 7.3) showed that the guidelines for creating a

good map are not driven by universal criteria - like accuracy, coherence, or empirical correspondence - alone, but ought to be dependent on aims, purposes, and standards of the respective *community* which is going to *use* the map. The conclusion was that criteria for successful (scientific) knowledge creation are not a priori given but depend on *aims and standards endorsed by the respective (scientific) community* (Longino, 2002, p. 116).

From a normative standpoint this entails that knowledge creation on its transformation from mere content (or in organizations: from a mere distinction) to inter-subjective, collective *knowledge* ought to be validated by community-dependent criteria like aims and purposes of knowledge for that community. Longino suggests that this ought to be done within a space of „critical discursive interaction“ marked by the features of (1) venues and (2) uptake of criticism, (3) public standards and (4) tempered equality (Longino, 2002, p. 128ff.). We subsumed these features as a normative guideline calling for an (a) *enabling* knowledge creation environment where new claims are critically reflected by multiple views, and open, transparent standards which allow equal access to the field.

Furthermore, the features of such a critical discursive interaction also ought to be (b) *constraining*, since the social context of knowledge creation is understood as a field of knowledge *validation*: not any content ought to become knowledge, but only content which has been exposed to critical interaction within the „aims“ and „standards“ of the respective community. According to Longino knowledge is normatively constrained to content which *confirms to aims*, and which is *accepted by standards* of the respective community (Longino, 2002, p. 135ff.).

Besides being *enabling* and *constraining*, the social environment of knowledge creation also ought to be (c) *reflecting*: also constraining aims and standards are to be open to change and progress. This is significant because otherwise there would be no channel for fundamental changes of a field. Crucial paradigm shifts and scientific revolutions would not have been possible without critical reflection of the general assumptions and structures of a cognitive community. Hence, scientific (and in consequence also organizational) communities

ought to scrutinize, modify, and (re-)create also their second-order level of knowledge, i.e. their standards and aims, their background assumptions, and ontological commitments. Thus, a proper knowledge creation environment should provide critical discursive interaction not only for its stock of knowledge but also for the reflection and (re-)construction of its aims and standards (Longino, 2002, p. 134f.).

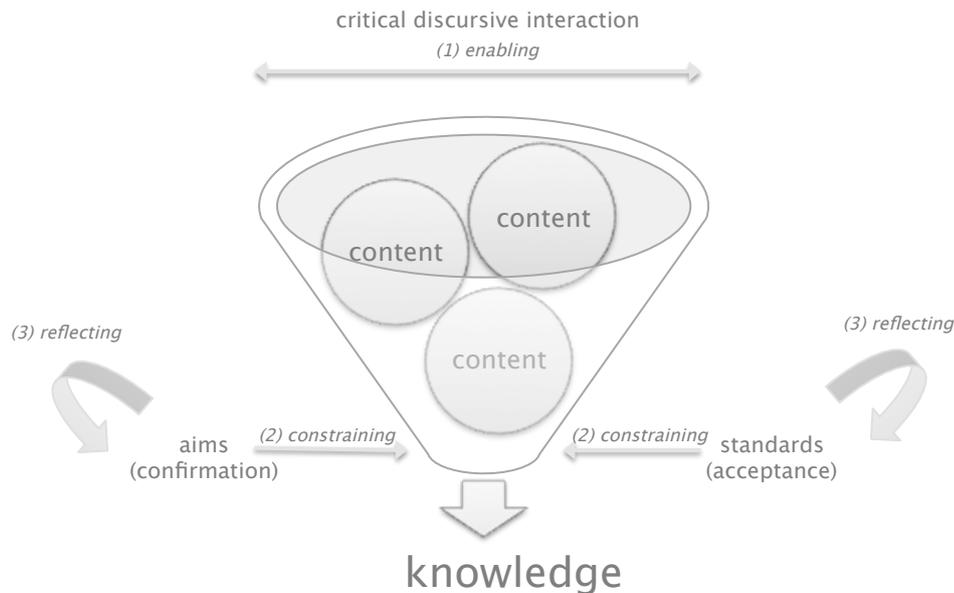


Figure 11.6: Core norms of social epistemology: enabling, constraining, and reflecting

Our first research question (concerning an organizational epistemology) asked „how can a normative epistemological account for organizations be grounded and justified?“ (chapter 5.4). In part II we tried to prepare such a ground for knowledge creation for organizations by referring to the philosophical discussion about a normative concept of knowledge, especially to the social epistemological account of Helen Longino. The latter reconciles the contradicting understandings within the philosophical discussions of knowledge, i.e. of (1) knowledge as purely socially constructed, open-ended, and relative, and of (2) knowledge as purely rationally constrained, and absolute. The integration of both views prepared a social-epistemological ground for our organizational epistemology.

11.2.3 Epistemological guidelines for organizational knowledge creation

In part I we learned how to *describe* knowledge creation at organizations, i.e. as distinction-making on different levels with different types of concepts. Then, in part III (based on the philosophical findings from part II) we *prescribed* values and features of the knowledge creation environment which was understood as a space of transformation from distinctions to knowledge (in its normative sense). To do so, we recontextualized the social epistemological guidelines of (1) enabling, (2) constraining, and (3) reflecting to organizations in chapter 9.

The first resulting guideline was to *enable* an open space of knowledge creation. This was based on Helen Longinos concept of critical discursive interaction. Hereby, the feature of „(tempered) equality“ was interpreted as „inclusion“, i.e. as a call to extend the „critical resources“ of the organization and to include a variety of potential knowledge producers. This supports „critical multi-perspectivity“ which was derived from the social-epistemological features „venues“ and „uptake of criticism“. According to „critical multi-perspectivity“, organizations ought not only to *allow* but to *encourage* participation in knowledge evaluation and creation on a broad basis allowing multiple actors to enter the discourse. For this to happen in an „organized“ way, „transparent“ (if not even „public“) standards and structures have to be defined. Only if organizational actors know how to enter and how to proceed within knowledge creation, these actors are actually able to be part of critical discursive interaction.

The first guideline of „enabling“ was rooted in the open-ended and pluralistic character of knowledge.

The second guideline adapted the need for *constraining* knowledge creation. Not to universal norms, but to the specific aims („confirmation“) and standards („acceptance“) of the respective knowledge creating community. This is important because just as the particulars of scientific knowledge (data), also the particulars of organizational knowledge (practice) allow high flexibility and open-endedness in regard to the outcome of knowledge creation. Therefore, organiza-

tional actors need guidance and support in order to not only create distinctions but to create useful knowledge. Hence, organizational distinctions need to be „accepted“ to be within the scope of the organizational structure, as well as they have to be „confirmed“ in order to be aligned with organizational goals¹⁶⁷.

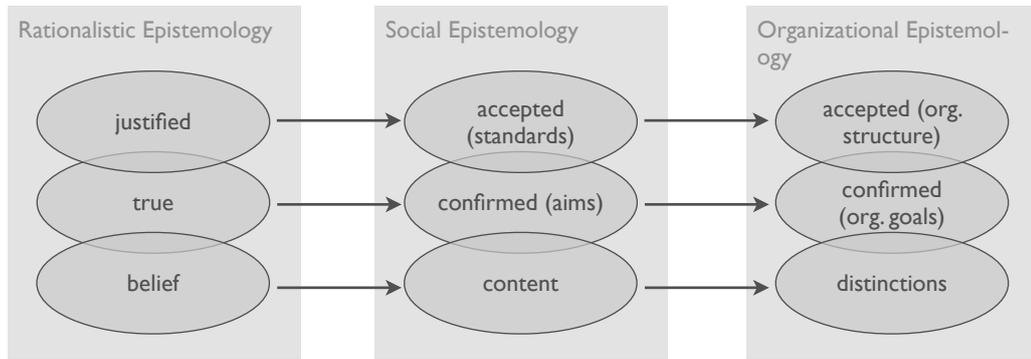


Figure 11.7: Guidelines for critical social interaction in rationalistic, social & organizational epistemology

Remember the example of the nurse in the hospital: what was important was not only to have multiple perspectives and an open environment. In contrary, the main challenge was how to constrain the open-endedness of her chaotic and equivocal surroundings (J. R. Taylor & Van Every, 2000, p. 275; Weick, et al., 2005, p. 409). Her knowledge creation and application activities (e.g. processing values from measuring devices, or making a diagnosis) had to be constrained and guided by organizational factors like *goals* (care for patients health, not for gardening) as well as to *structure* (report to the right supervisor in the right language) of the respective organizational field (see chapter 1.3.3).

The second guideline of „constraining“ is rooted in the normative character of knowledge.

The third guideline was about to *reflect* upon those goals and structures which were the constraining factors in the second guideline. Thus, this last guideline calls for to expose goals and structures to critical evaluation and potential redesign. It is what we, in our discussion about social epistemology (chapter 7.7),

¹⁶⁷ Notice, that this step ultimately connects our general description of organizations, as „structured towards goals“ (from chapter 1) with the whole dynamics of our organizational epistemology.

called „second order discourse“ (Longino, 2002, p. 136f.) and in our discussion about organizational learning (chapter 4.2) „double loop learning“ (Argyris, 1977; Argyris & Schön, 1978). For organizations this implies to put effort in providing an environment that produces awareness as well as processes to enable actors to rethink and to critically scrutinize the organization’s core goals and deeper structures. This step is crucial because some perturbances and changes in practice cannot substantially be solved in the single-loop. Organizations ought to enable actors to produce knowledge both *within* (single-loop) as well as *beyond* (double-loop) given goals and structures. Hence, organizations need not only to be *prepared* for a „revolution“ but also to *actively* and *continuously* reflect upon possible changes of its goals and structures.

The third guideline of „reflecting“ was based on the contextualized character of knowledge as well as it was again based on open-endedness which re-enters the knowledge creation process on a second level.

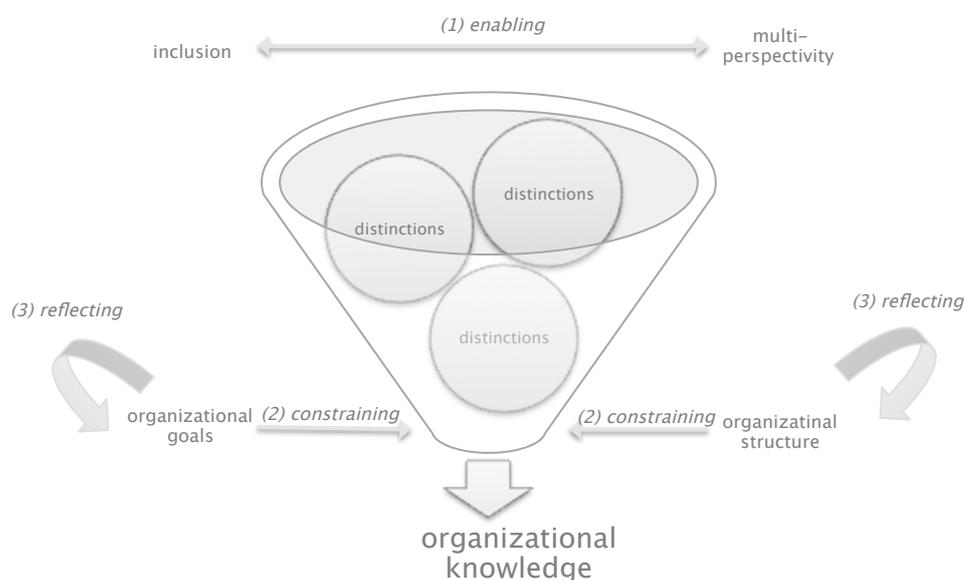


Figure 11.8: The three transformative guidelines of organizational knowledge creation

Those guidelines presented a possible answer to the second research question defined in chapter 5.4: „Which normative criteria and guiding principles for organizational knowledge creation can be developed out of such a foundation?“

11.2.4 Organizational Epistemology: a theoretical toolkit

Just as „organizational knowledge“ (in part I) also our conception of an „organizational epistemology“ attempts to serve as a theoretical framework and to provide a terminology which can be used for understanding real-world organizations. Hereby, an „organizational epistemology“ is not only about to empirically describe an organization but to normatively evaluate it as a knowledge creation space. This does not mean that it neglects the possibility of describing organizations. In contrary, it is necessary to describe and grasp the appearances of knowledge in the organization (its „epistemic attributes“) in order to proceed to a normative evaluation (which applies „epistemological criteria“).

The latter was demonstrated at the „Seven-Eleven Japan“ (SEJ) use-case in chapter 10.3 where we supplemented the descriptive results from the „organizational knowledge“ framework (sales hypotheses are organizational distinctions which enable organizational action) with the „organizational epistemology“ framework (sales hypotheses are generated as knowledge claims and therefore ought to follow epistemological guidelines). Thus, we evaluated how SEJ designs its items-management environment towards a knowledge creation environment, measured by our epistemological guidelines *enabling*, *constraining*, and *reflecting*.

First, we saw that knowledge creation (the construction of knowledge claims as sales hypotheses) is not restricted to management or white collar experts but delegated to all store employees. Besides this *inclusion*, SEJ sales employees are enabled to develop *critical multi-perspectivity*: (a) they are provided with multiple input, like, sales figures, weather forecasts, planned local events, product information, experiences with customers, best practices, and so forth; (b) they are being prompted to take multiple possible customer viewpoints into consideration. Together with continuous access to transparent standards, like the organizations main goals, SEJ encourages thousands of actors to participate in knowledge creation thus enabling a vast and open knowledge creation space (Nonaka, et al., 2008, p. 138ff.).

Second, we pointed out that the manifold outcomes of distinction-making (i.e. the making of sales hypothesis and their following item-orders) were *con-*

strained to specific acceptance processes (especially by the structured hypothesis verification procedure) as well as to confirmation processes (via the connection to values and the firms philosophy, but also via more local goals, e.g., those of present sales campaigns).

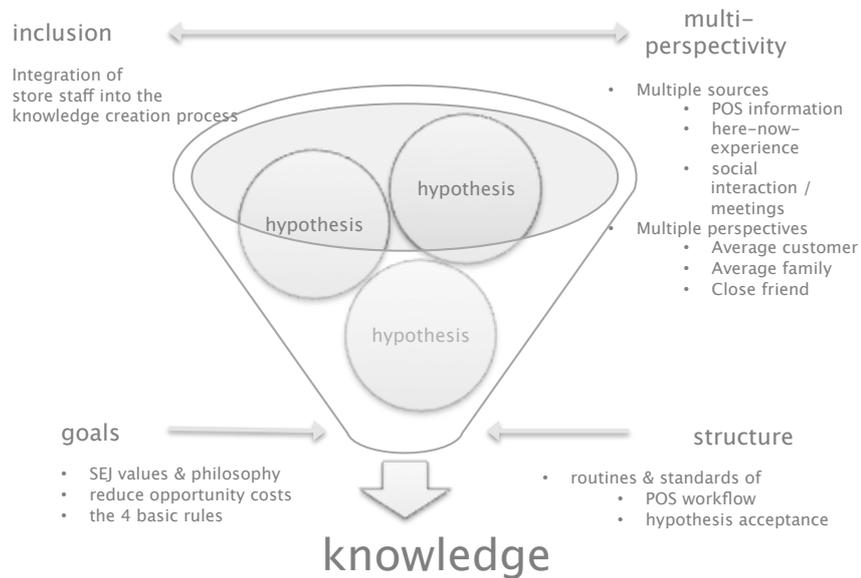


Figure 11.9: The organizational epistemological guidelines of enabling and constraining at Seven-Eleven Japan

Concerning the third guideline we saw that SEJ seems not to take any specific measures in order to *reflect* on those goals and structures. With such a second-order discourse in place, the items-management environment would be able to cope also with more fundamental problems. As possible improvement we suggested to facilitate existing meetings as reflective spaces where given goals and structures intentionally could (and should) be opened to critical discussion.

The application of our outlined „organizational epistemology“ to the SEJ use-case was our attempt to finally tackle the third and last research question defined in chapter 5.4: *How can such guiding principles be applied to real world organizations?*

11.3 Concluding reflections & future research

11.3.1 Philosophy, epistemology, and knowledge management

In the last months of his life Ludwig Wittgenstein was puzzled with the question if and how something can be known with certainty (Wittgenstein, 1969). And although in his former works - especially in the „Philosophical Investigations“ (Wittgenstein, 1953/2006) - he relativized knowledge to social practice, in his last thoughts on „certainty“ he brought in the old distinction between belief and knowledge:

If someone *believes* something, we needn't always be able to answer the question 'why he believes it'; but if he *knows* something, then the question "how does he know?" must be capable of being answered.“ (Wittgenstein, 1969, §550, my emphasis)

It seems like Wittgenstein himself was struggling with the opposition between (1) knowledge as something that is constructed and embedded within a social practice (or, in his words, within „language games“) versus (2) knowledge as something that has to be justified and validated in order to be differentiated from mere belief. But this opposition is nothing else than the difference between the (1) „social“ and the (2) „rational“ approach (Longino, 2002, chapter 1). Can the two approaches be connected? They can, if we find a way which acknowledges the social construction of knowledge but at the same time defends its normative characteristic. To get there Longino suggests to understand the social itself as a „validating element“ (Longino, 2002, p. 122). I.e. to understand the social context of knowledge creation as a justificatory practice guided by criteria and guidelines to which knowledge creating actors ought to be committed to. We systematized these guidelines and normative criteria as „enabling“, „constraining“ and „reflecting“.

From this viewpoint, philosophy claims to be able to provide guidelines for knowledge creation. Epistemology then is a prescriptive project which strives towards criteria and guidelines which are meant to be binding to those pursuing knowledge. Here lies the reason why philosophy can be fruitful also for the theory of organizational knowledge and „knowledge management“. This is because it comes up with a foundation to develop a normative framework for successful knowledge creation and application environments. A framework

which is not only based on some use-cases where some guidelines were induced but which is derived out of a concept of knowledge itself.

By introducing philosophy to the descriptive theory of organizational knowledge we have been able to provide guiding criteria for „reflective practitioners“ as well as for evaluative researchers. From the beginning of this inquiry it has been our attempt to develop concepts which can be used both for researchers and practitioners. Hereby, the theoretical toolkit of „organizational knowledge“ (part I) presented a way of describing types and levels of organizational knowledge, its creation and application. By connecting these outcomes with a normative understanding of knowledge (drawing from philosophical epistemology) we were able to come up with a supplementing theoretical toolkit. This prescriptive „organizational epistemology“ (parts II & III) provides a framework (a second theoretical toolkit) which offers guidelines for the design of successful knowledge creation environments. Thus, the practitioner is not only able to understand and describe organizational knowledge but also receives a toolkit for critical evaluation and design of knowledge creation spaces. It is an irony: introducing a theoretical discourse from philosophy opened new possibilities to become practical. By consulting the philosophical discussion of epistemology we were able to boost the practical significance of our theory of organizational knowledge. The reason for that was the normative spin which entered with philosophy. A normative spin which (although for the moment only at a very abstract level) provides guidelines and assistance for real-world organizations.

In other words, our inquiry tried to take philosophy seriously. Serious here means that we took seriously the claim of philosophy to be *general*. And if we claim generality for our philosophical reflections on knowledge, then we claim that these reflections have significance for all specific instantiations of knowledge, be it in the sciences or, as in our case, in organizations.

Whether the presented *applied epistemology* in this inquiry was successful or not, has to be judged by others. However, I hope to have shown that it can be inspiring and fruitful for the discussion on „organizational knowledge“ and

„knowledge management“ to incorporate philosophical reflections about the nature of knowledge.

11.3.2 Suggestions for future research

The „tacit dimension“

One suggestion for future research may be to open the presented approach towards a type of knowledge which is specifically important for organizations: implicit (or „tacit“) knowledge. Although the latter has been part of our discussions in chapter 2.3 (Nonaka & Takeuchi, 1995; Nonaka, et al., 2008), chapter 3.2 (M. Polanyi, 1958, 1967), and in chapter 5.3 (Schreyögg & Geiger, 1997, 2005), our inquiry focused on the two types „propositional“ and „narrative“ knowledge; both are explicable to the form of language and both could be described as „templates“ or „concepts“ which stand in a certain relation, as a tension, or as a gap to organizational action and practice. „Tacit“ knowledge, on the other hand, by definition *is* action, i.e. is incorporated to the actors as skills or competencies. But if this is the case, how can tacit knowledge be validated, scrutinized, adapted, changed, and related to practice? How can it be part of a „critical discursive interaction“? According to Schreyögg and Geiger it cannot and therefore has to be excluded from the definition of organizational knowledge (Schreyögg & Geiger, 1997, p. 83). But do we really have to go that far? To make tacit knowledge inter-subjectively exchangeable (and also discussable) may not be impossible. This has been indicated by Nonaka's & Takeuchi's conversion process of „socialization“ which was about to communicate and share implicit knowledge: the master shows bread baking and the apprentice imitates, thus gradually acquiring tacit knowledge (Nonaka, 1991, p. 98f.; Nonaka & Takeuchi, 1995, p. 100ff.). It may also not be impossible to understand tacit knowledge as a validity claim which (just as propositions and narratives) is directed towards organizational practice. This could lead to an understanding of tacit knowledge which always involves some kind of distance or abstraction from practice, making it open-ended, changeable, as well as contestable and

verifiable. Consider our example from chapter 5 (and then again in chapter 8): in saying that someone is capable of „bike-riding“ I do attribute tacit knowledge of bike-riding to that person. Although on a communicative meta-level, one may ask back: „Verify it! Is this person really capable of riding a bike?“. This would open a gap between *knowledge* (bike-riding as implicit knowledge of a person) and *practice* (the concrete event of this person riding a bike). The former would be a generalized concept (bike-riding) which stands opposed to the latter (its *particulars*, i.e. all the possible spatio-temporal events where riding a bike is possible). And even if I restrict („contextualize“) knowledge, if I e.g. claim to be able to ride only that specific bike of type X, nonetheless many different situations of riding this specific bike of type X are possible. Also here, even if we do not refer to „all“ possible particularities, we refer to „all of something“ (Schauer, 1991; Tsoukas, 2005a, p. 78). Future research could hook into the discussion of tacit knowledge in order to detect a relation, tension, or gap between knowledge and practice instead of simply identify knowledge with action. This could help to „demystify“ the tacit dimension and to turn implicit knowledge to a de- and reconstructible black-box, to an organizational concept (like propositions or narratives) which can be reopened, critically scrutinized, and which can be part of critical discursive interaction.

The practical dimension

Chapter 10 tried to apply the theoretical concepts of our developed organizational epistemology to a specific use-case. Of course, this does not verify its borderless applicability to all possible practical cases. In contrary, it would be the aim of future research to connect the introduced organizational epistemological vocabulary to empirical organizational studies in order to explore the limits of our theoretical framework. Revealing these limits then could trigger further theoretical work in order to modify and/or extend the presented organizational epistemology. This is especially important if we want our shift (from philosophy to organizations) to become a practically applicable toolkit. In chapter 9 we gave only a first impression on what the guidelines of „enabling“,

„constraining“, and „reflecting“ could mean to organizations. Future conduct ought to carry out empirical research in real-life organizations in order to apply, verify, and, if necessary, to falsify our developed concepts¹⁶⁸. Future research has to mutually supplement theoretical and empirical outcomes to refine and redefine our outlined criteria and guidelines for successful organizational knowledge creation.

Though there remain open questions and further research this inquiry made a first step towards a normative framework of organizational knowledge which is based on a solid (social) epistemological grounding. This should be enough motivation for future work, both on an academic level (interpretation of empirical studies, further development of the theoretical framework) as well as on a practical level (evaluating and designing knowledge creation environments).

¹⁶⁸ This means that our framework also is nothing else than a hypothesis, a piece of knowledge which stands against a wide practice of possible application. Thus, all discussed normative criteria of knowledge also are valid for this inquiry. This makes the talk about knowledge (and epistemology) to a circular discussion, i.e. where the main subject (knowledge) always possibly re-enters the discussion on a meta-level: to claim something about knowledge itself is knowledge, hence a claim about itself.

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Areas of interest

Organizational Epistemology, Philosophical foundations of knowledge-based management, Organizational Theory, Knowledge Management (Systems), E-Learning, Human Resources, Learning Management & Evaluation

Education

Dr. phil. University of Vienna (doctoral candidate), Stanford University (research visitor), 2012

Mag. phil. (M.A. & B.A.) University of Vienna, Philosophy & Sociology, 2006

B.Sc. University of Derby, England, Computer Science, 2001

Basic Austria, Vienna & Sweden, Göteborg, Västerås, 1997

Academics & professional experience

Lecturer, University of Applied Sciences Upper Austria, 2010-

Scientific Associate & Lecturer, Vienna University of Economics and Business, 2006-2010

Senior Consultant, Knowledge Markets Consulting (Spin-Off Vienna University of Economics and Business), 2006-2010

University Assistant & Lecturer, Department of Sociology, University of Vienna, 2006-2008

Scientific Board, as Co-founder "philosophische akademie", Vienna, 2004-

Project Manager, Raiffeisen Bank Austria, 1998-2001

Courses taught

The shaping of meaning in organizations, University of Applied Sciences Upper Austria, 2010-

Elektronisch gestütztes Lern- und Wissensmanagement, Vienna University of Economics and Business, 2007-2010

Soziologische Theorien (Interpretative Theorien, Gendertheorien, Systemtheorie), University of Vienna, 2006-2008

Publications

Normativität des Scheiterns: Die Grundlage des Ethischen bei Judith Butler. VDM Verlag Dr. Müller, Saarbrücken 2010.

"Prolearn Learning Performance Management Portal: Deliverable 7.9." Prolearn Consortium / European Commission Sixth Framework Project, 2008.

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"Rationalität - Placebo der Wahrheit: 2. Symposium der philosophischen Akademie." Frankfurt a.M.: Peter Lang, 2006. (Co-Editors Christian Seewald et.al.)

"Begierde des Logos: Hegels begehrendes Selbstbewusstsein, programmatisch punktiert." Tabula Rasa Jeneser Zeitschrift für kritisches Denken. 21 (2005).

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Invited Talks

"Lernprozesse als Wertgegenstände". Learn2Perform 2009, Vienna.

„Learning Performance Monitoring applied“. Professional Training Facts 2008, Stuttgart

"Evaluate. Effective learning performance monitoring and benchmarking with an easy to use online service", Learn2Perform 2007, Vienna

"Warum wir nicht wollen müssen, was wir sollen." (mit Jakob Maché). 35. Österreichische Linguistentagung, Innsbruck 2007

„Die Krise des Subjekts als Grundlage neuerer Wissenschaftstheorie“ - Ordnungen des Denkens. Oldenburg 2005

„Ethik als Differenz. Versuch einer sach- und zeitgemäßen Interpretation der Kant'schen Bestimmung des handelnden Menschen“ - Ethik - Zwischen Inflation und Moralin, Salzburg 2004

Miscellaneous

Languages German, English, Swedish

Citizenship Austria, born in Vienna May 2nd 1978