
The Mutual Shaping of Organizational Culture and Technology

Jeannette Hemmecke^a, Kasra Seirafi^a

^aUpper Austria University of Applied Sciences, Softwarepark 11, 4232 Hagenberg, AUSTRIA

ABSTRACT

Organizations and humans use distinctions in order to make sense of the world and to act in it. Technology opens a space of action-pathways, e.g., a CRM-System (Customer Relationship Management) defines the customers and constrains the way organizational actors (e.g., sales agents) deal with them. Thus, technology enables and constrains distinction making of organizational actors and by that influences organizational culture.

It is well known that features of a technology are often used in unpredictable ways. Sometimes the whole set of features of a technology is used, sometimes only a subset. Sometimes features are even used in contrary ways than intended, and of course, sometimes a technology is not used at all. Thus, there exists an inevitable gap between (a) the possibilities of technology on one side, and (b) its organizational utilization (i.e., which distinctions actually become the norm in organizational practice) on the other. This transition from one to the other can be seen as an open process of „becoming“ which eventually leads to a state of „being“ (Patriotta, 2003, p. 202; Cooper & Law, 1995). But which organizational factors influence this transition? How come that the same technology is used in such a variety of ways in different organizations? How does technology become part of organizational practice? How does technology turn into an institutionalized „black box“ (Patriotta, 2003, p. 179)? Existing research still lacks to *explain* the underlying processes from „becoming“ to „being“. Could the concept of organizational culture provide a better understanding of the underlying processes of this transition?

This paper introduces an understanding of organizational knowledge as distinction making. From that point of view, we explain how technology contributes to organizational distinction making. Based on that, we propose organizational culture as a form of collective distinction making along the models of Schein's „Levels of culture“ (Schein, 2004) and Stahl's concept of group cultures (Stahl, 2002). The four group cultures „community“, „troop“, „team“, and „crowd“ provide a valuable tool to analyze the transition from the point of view of two basic dimensions of culture: a) space and b) time. First, we systematically compare the four group cultures and their relation to distinction making and the use of technology, from a theoretical point of view. Second, we discuss the above stated interdependency between technology and organizational culture along an empirical study rolled out within the „SemantLink“ project (conducted at the University of Applied Sciences Upper Austria) where qualitative interviews were conducted at different organizations. With the help of this study, we test the application of the presented concepts of organizational culture at the given empirical material and outline first hypotheses how different organizational group cultures influence the way organizations deal with technology.

Contact: jeannette.hemmecke@fh-hagenberg.at, kasra.seirafi@fh-hagenberg.at

1 ORGANIZATIONS AND THEIR MEMBERS AS DISTINCTION MAKERS

The organizational theorist Karl Weick once mentioned that the idea of „distinction making“ can be understood along the example of a hospital (Weick, et al., 2005). A nurse in a hospital deals with highly complex and multifaceted circumstances that 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‘ 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. It is an effect and the result of the application of concepts to a chaotic environment. It is her actively turned attention to specific aspects of the complex circumstances that makes the situation. It is this attention, which allows her to name, label, and give meaning to things in the world. According to organizational researcher 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).

This is exactly what Karl Weick and others emphasize by stating: „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. An organizational member like our nurse is crucially bound to organizational context and concepts. Especially to „rationalistic“ concepts like rules, roles, or hierarchy, but also to more „socialized“ concepts like culture, power relations, or narratives (for an overview see Seirafi 2013). Rules and roles, for example, define which things she has to focus on and to whom she has to report. They all are organizational vehicles that guide her distinction making, thus her way in ordering and constructing her world. In this paper we want to emphasize not so much on rules and roles but on how *technology* is such a vehicle of distinction making. Next chapter will show that and how technology plays an important part in the process of organizational distinction making. After that we will examine which non-technological, i.e. cultural, factors may influence the use of technology in order to allow distinction making.

2 TECHNOLOGY AS OPEN DISTINCTION MAKING VEHICLE

First, let us switch from nursing to a company’s sales department. Let us assume, sales account managers of the company have to use a new CRM (customer relationship management) software which allows to store information about customers in a much more detailed and sophisticated way than before (the system may e.g. 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 which 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 influences the distinction-capabilities of its actors. The CRM

offers knowledge as practically relevant distinction that - to a certain extent - defines the customers for the organization and constrains the way sales agents deal with them. This knowledge, provided by an organizational expert system, shapes the underlying capability of actors in making distinctions and grounding action. Take the new feature that calculates the priority of customers: if successfully internalized by actors and inscribed to the structures of the organization, then the calculated priority will not only 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 that literally did not exist before. S/he used technology in order to make distinctions relevant to organizational action.

At this point we have to avoid a typical pitfall, which encounters both in research and practice, i.e. the pitfall of technological determinism (McLoughlin 1999, p. 94). The latter states that technology has a prearranged purpose and determines the way it affects humans and organizations. But technology is 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. Technological development and use can be seen as „a non-determined, multidirectional flux that involves constant negotiation and renegotiation among and between groups shaping the technology.“ (Patriotta, 2003, p. 46).

Thus, the „groups shaping the technology“ are not unequivocally constrained by the technology itself. We should rather consider technology as an open space of possibilities, which allows organizational actors and groups to generate knowledge and distinctions in order to understand their world and to act in it. But this *allowance* to constrain those possibilities is also an *obligation*. To constrain is absolutely necessary because if organizational members would not constrain the various possibilities they face, the given technology would not be useable in their every days organizational context: things not only have to be *possible*, they also have to be *real*. Like with knowledge in general (Seirafi 2007, 2013) technology is bound into a dialectical relation between *possibility* and *reality*, between (a) the possibilities of technology on one side, and (b) its organizational utilization (i.e., which distinctions actually become the norm in organizational practice) on the other. This transition from one to the other can be seen as an open process of „becoming“ which leads to a fixed (though temporally fixed) state of „being“ (Patriotta, 2003, p. 202; Cooper & Law, 1995).

3 TECHNOLOGY AS BECOMING AND BEING

Just like with all other things humans deal with, technology has an open-ended, plural, and „proximal“ (Cooper & Law, 1995) nature: things (as well as knowledge about things) have no „naturally“ predetermined essence (for epistemological groundings see Seirafi 2013). Hence, technology is not simply „there“ but in its very nature an activity, a process, a becoming.

But despite its contingent and process-like nature, technology leads to results, it is realized and used, it influences organizational routines, is put into place and is applied (or not applied). This points to the second aspect of the dialectical relation of technology, which is about durability and stability. It is about the obvious fact that technology is not only a *process* but also a *product*. It is not only in flux and in permanent becoming but also a being. The organizational researcher Gerardo Patriotta correctly points out that exactly this transition from being to becoming is a crucial spot in understanding how technology in organizations (as well as organizations in general) has to be understood, i.e. that „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. (...) 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’ [or ‘technology’, the authors], 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.)

The use of technology within an organization can be understood as a translation from becoming to being. 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 exploited:

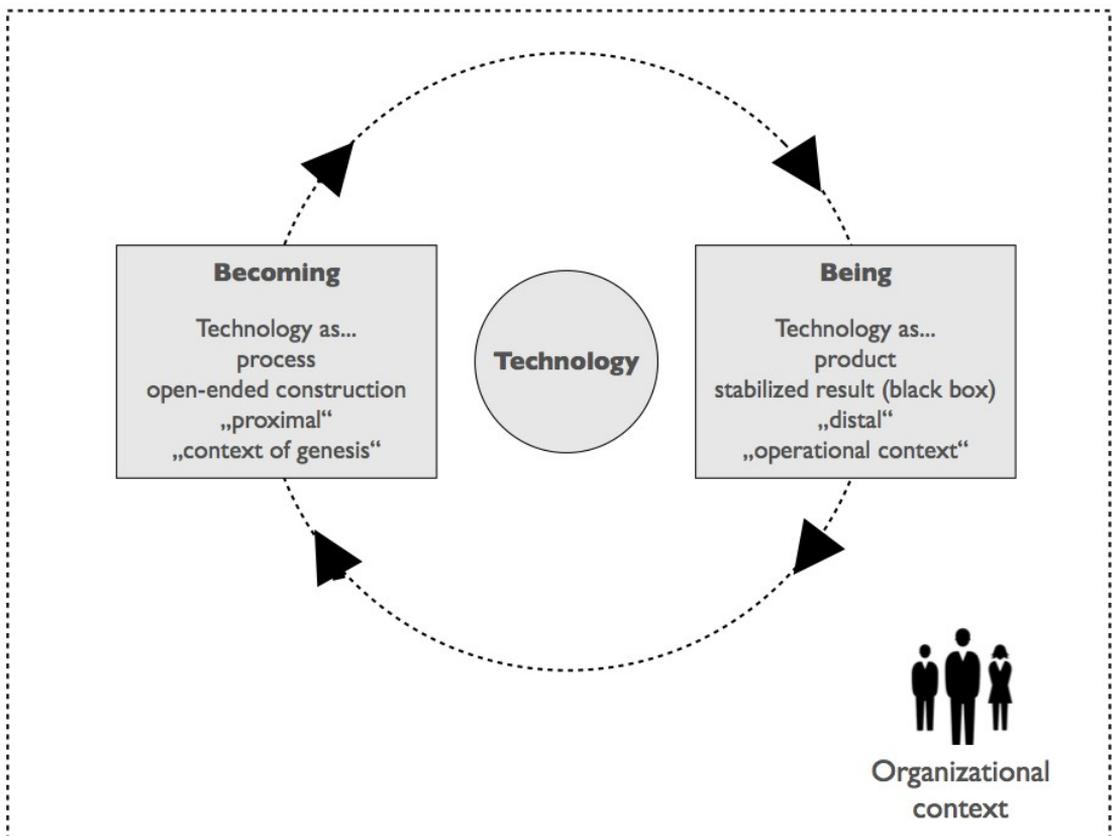


Figure 1. The transition from becoming to being of technology within organizations.

4 EXAMPLES FROM ORGANIZATIONS

Next we will give some examples from an empirical study rolled out within the project “SemantLink” (conducted at the University of Applied Sciences Upper Austria) where qualitative interviews explored the use of technology for knowledge management at different organizations:

- (1) One series of interviews was conducted within a university context. Results showed that the different research groups at the university used technology (specially software products) in specific ways that were not the initial purpose of that technology. E.g. versioning software was not only used for its original intention (i.e. synchronizing software source code within a group of software developers) but also to synchronize and collaboratively edit project management documents. Though the organization provided ready-to-go standard tools (e.g. Microsofts “Sharepoint Server”) for those purposes many research groups reconfigured and exploited their versioning software for new purposes. Interestingly, many groups very quickly switched to other tools like „Dropbox“¹ as they agreed that it is more effectively than their rearranged versioning software.
- (2) Other interviews at a large manufacturing corporation showed that, compared to the university context, the examined department did not have that freedom of choice and autonomy which would have allowed to introduce new technology or rearrange existing one, at least not in that flexible way. But also in this, more formally driven and more standardized, environment given technology (in this case again Microsoft Sharepoint Server) was not fully implemented in its intended way. Interviews revealed that all relevant digital project artifacts were collected on internal file shares. The Sharepoint technology was only used in cases where permission constraints did not allow team members to share folders. The actual collaborative features of Sharepoint (like forums, discussions, project responsibilities, or to-dos) were rarely used. In other words, the Sharepoint technology was only used as a workaround in cases where the ordinary file share technology did not work.

Those two examples show that technology from the perspective of „becoming“ offers many possibilities how it can be used and implemented into the organizational context. This implementation turns technology into a „being“ (or „non-being“ if it is not used at all). Versioning software offers many possibilities to manage software source code but it also could be used for other purposes and be extended (as observed in the university case). On the other hand, a technology like Sharepoint offers a lot of project collaboration features but it could also be used only as simple file share (as observed in the corporations case). The transition from becoming to being turns technology as possibility to technology as organizational reality. But how this transition looks like cannot be explained by the technology itself. It is an explanandum that yet has to be clarified. Why did the research team at the university rewrite their tools instead of using the ready-to-go system? And why did they switch so quickly to other tools but the one given by the organizational context? Why did the project employees at the large corporation turn their Sharepoint technology to a workaround technology, only used in „emergency“ cases?

The general question is, which organizational factors influence the transition from becoming to being? How come that the same technology is used in such a variety of ways in different organizations? How does technology become part of organizational practice? How does technology turn into an institutionalized „black box“ (Patriotta, 2009, p.179)? Existing research still lacks to *explain* the underlying processes from „becoming“ to „being“.

¹ “Dropbox,, is a web-based file sharing tool (which optionally can be integrated into the operating system of clients) for private individuals as well as organizations.

5 ORGANIZATIONAL CULTURE AS CORRIDOR FOR COLLECTIVE CONSTRUCTION

In this part, we look at organizational culture and ask ourselves what it can contribute to the analysis and explanation of the crucial transition from becoming to being within the field of technology. Following Schein (2004, p.17, *emph. in original*) -- who is probably the most influential author in the area of organizational culture -- organizational culture is “a pattern of shared basic assumptions that was learned by a group as it solved its problem of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.” Culture in that sense is establishing a corridor for the construction of meaning of organization members. Culture is not neutral, but normative which means a culture favours certain ways of doing things whereas it disapproves others. Usually, the development of organizational culture and its acquisition through the members of an organization is an unconscious socialization process. People only start to think of culture explicitly if there is a clash of cultures. For an individual this might be a clash of personal values with contradicting corporate values. For a group this might be a clash of two corporate cultures with contradictory assumptions, e.g. during and after the fusion of two firms.

Culture manifests itself at three levels according to Schein (2004): (1) artifacts, (2) espoused values and beliefs, and (3) underlying assumptions. Artifacts show the surface of culture. They comprise the organization's visible products, language, technology, myths, stories, clothing, published lists of values etc.. Although artifacts can be observed quite easily, it is difficult to make sense of them without knowing the deeper levels of culture. Espoused values and beliefs constitute the intermediate level of culture. They are reasons or justifications for artifacts and behaviour. They are hard to observe directly, but are still at a conscious level, which implies that one can ask for them. However, the espoused values and the visible behavior might seem in conflict with one another. This might be because values that are declared to be the source of action are often not what really *is* the source of a certain behavior, but what *should* be the reason. Espoused values can be compared to what Argyris & Schön (2006) call “espoused theories of action”, and these might be different from the actual “theories in use”. Theories in use are the mental models that actually underlie actions pursued. Theories in use might be comparable with Schein's third and deepest level of culture. Basic underlying assumptions are according to Schein (2004) the “essence” of culture. They are deeply rooted patterns of thinking and perceiving the world that shape people's actions unconsciously. It is exactly this taken-for-granted level of basic assumptions that is most relevant for understanding organizational culture and its impact on limiting and opening up organizational action pathways towards a certain use of technology.

6 TWO BASIC DIMENSIONS OF CULTURE: TIME AND SPACE

Many researchers have tried to map culture along different cultural dimensions (e.g., G. Hofstede, G. J. Hofstede & Minkov, 2010, Trompenaars & Hampden-Turner, 2009, E. T. Hall, 1989, E. T. Hall & M. R. Hall, 1990). Two dimensions are central to all of them in one way or the other: time and space. We as humans relate to each other in time and in space (cf. E. T. Hall & M. R. Hall, 1990). G. Hofstede et al. (2010), for example, use the term “uncertainty avoidance” in order to explain major differences in the way how easy or difficult it is for people in a certain culture to deal with uncertainty and how much stability is needed in relationships over time. Trompenaars & Hampden-Turner (2009) as well as Hofstede et al. (2010) deal with a dimension of collectivism (group) vs. individualisms (individual) in order to explain cultural difference in relation to space. E. T. Hall and M. R. Hall (1990) showed how interrelated time and space are in relationships: Cultures that see time as something linear

and monochronic perceive relationships as subordinated to time schedules. Cultures that are oriented towards a polychronic time concept give relationships higher importance to time schedules.

Grounding on the same two basic dimensions of relationships between people, Thomann & Schulz von Thun (2003) derived the Riemann-Thomann model by developing further the psychoanalytic model of Fritz Riemann's "Grundformen der Angst". According to the Riemann-Thomann model every human is driven by four universal needs even if the degree of manifestation is different from one individual to another: (1) Everyone needs some sort of structure and stability in life in order to get a sense of control. (2) Everyone needs some kind of change and flexibility in order to be excited and to develop. (3) Everyone needs to relate to other people to sense love and emotional warmth. (4) Everyone needs some sort of distance from other people in order to feel autonomous and to strive for self-actualization. These four needs fit as polarities into the two dimensions: (a) a timely oriented dimension with its two ends of structure vs. flexibility and (b) a space oriented dimension with its divergent poles of closeness vs. distance.

Kumbier & Schulz von Thun (2006) related the Riemann-Thomann model to intercultural communication. They show how intercultural misunderstandings can be understood through the lens of how people in different cultures normally relate to one another in time and space. They show how a culture sets up a *field* of interaction in which an individual with its own needs and cultural socialization might feel comfortable and free to act or s/he might feel anxious and uncomfortable because the cultural field constraints her/his ways of doing things. The term "field" is meant in the sense of Lewin's field theory as a system of interrelated situational, group dynamic and individual forces to which an individual responds when acting (cf. Elie-Dit-Cosaque, Pallud & Kallinka, 2011). A major advantage of looking from a field theory approach on social change and technology adoption is that it helps "to create richer and less fragmented models in order to capture more fully the determinants of IT adoption and adaptation" (Elie-Dit-Cosaque et al., 2011, p. 202).

"Whether or not a certain type of behavior occurs depends not on the presence or absence of one fact or of a number of facts as viewed in isolation but upon the constellation (structure and forces) of the specific field as a whole." (Lewin, 1943, p. 306)

Thus, organizational culture can be seen as a complex field of interrelated forces.

7 FOUR IDEAL-TYPE GROUP CULTURES AS TOOL OF ANALYSIS

Stahl (2007) developed the Riemann-Thomann model further in order to analyze the dynamics in groups. Along the above mentioned two dimensions of duration vs. change and closeness vs. distance, Stahl suggests four ideal-typical group field types (in German, "Gruppenfeldtypen"): „community“, „troop“, „team“, and „crowd“ (cf. Figure 2). The ideal types might not occur in its pure stereotyped form, but they might help to analyze and compare specific groups towards their orientations (cf. Stahl, 2007).

Stahl (2007, p. 258ff.) describes the four ideal-typical group cultures as follows:

A *community* is characterized through a strong sense of shared identity. Members care for each other like in a family. They value trust, trustworthiness, reliability, care, and predictability. Leaving the group is not easy, it might even be a taboo, because members are bound emotionally and permanently together. Personal relationships are more important than hierarchical positions. Members of a community feel secure and safe in the group at the expense of individual freedom.

A *troop* has a clear and stable hierarchy and is strongly task oriented. Correctness, performance achievement, a sense of duty, and tangible and measurable success is valued in those groups. Showing

emotions or interpersonal sentiments is understood as threatening the good functioning of the group and thus a taboo. Members of a troop never leave the official channels which gives them security for action. Personal feelings and thinking is not part of the group but something private. Many (often male dominated) groups in the working environment appreciate the values, hierarchies, and security of a troop, e.g., military, financial service corporations, public administration.

In contrary to a troop, in modern economy, a *team* is often seen as the group ideal. Members of a team identify highly with their group which makes them highly engaged for the group. At the same time, a team adapts easily to ever new tasks. Team spirit and emotional warmth meet openness, creativity, and flexibility in a team. The task focus is less strong, most important is vitality and fun. A team is afraid of boredom and of formal rules that constrain their flexibility to act together on an informal basis.

The members of a *crowd* only come together for a clearly defined, short-term goal. When the goal is met, the group dissolves. Task orientation and efficiency on the one hand and individual freedom and independence on the other hand are appreciated most. Thus, to spend time for group dynamic processes or to invest in relationships between members is seen as wasted time. Long-term goals or hierarchical thinking do not fit the culture of a crowd, whereas nonconformity and change are welcome. The basic value of a crowd is freedom.

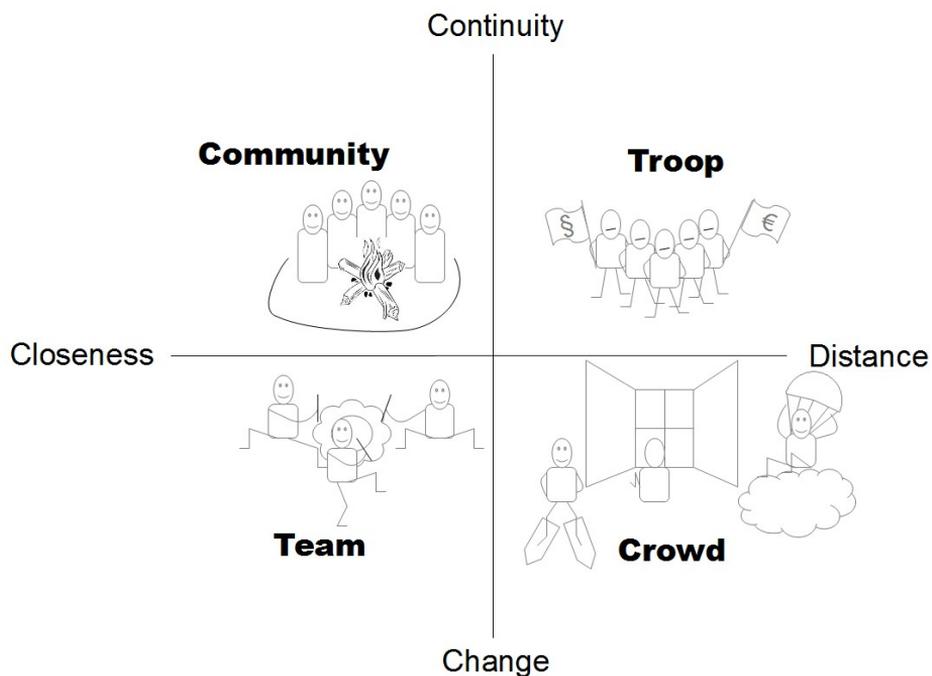


Figure 2. The Four Group Cultures (adapted from Stahl, 2007, p. 258).

8 ANALYSIS OF TWO EMPIRICAL CASES

Let us return to the two mentioned organizational cases and to our general question about the transition from becoming to being. The university case raised the question why versioning software was used also for purposes of project management (instead of using the actual software tool provided by the university). The corporation case raised the question why the Sharepoint technology was used only as shared file storage and why other features were not used. Both cases demonstrate how a specific technology is integrated and used within an organizational context. And those who observe and reflect this integration (be it managers, technicians, or researches) may be those who know a lot about what technology is capable of, i.e. they know the wide spectrum of possibilities inherent to the technology. And they also have expectations about how the technology has to be used. But often they are curious about how its integration into the organization, it's "becoming", results in a "being" which differs radically from their expectations. Our question as researchers is how and which social factors are at work influencing the process of becoming:

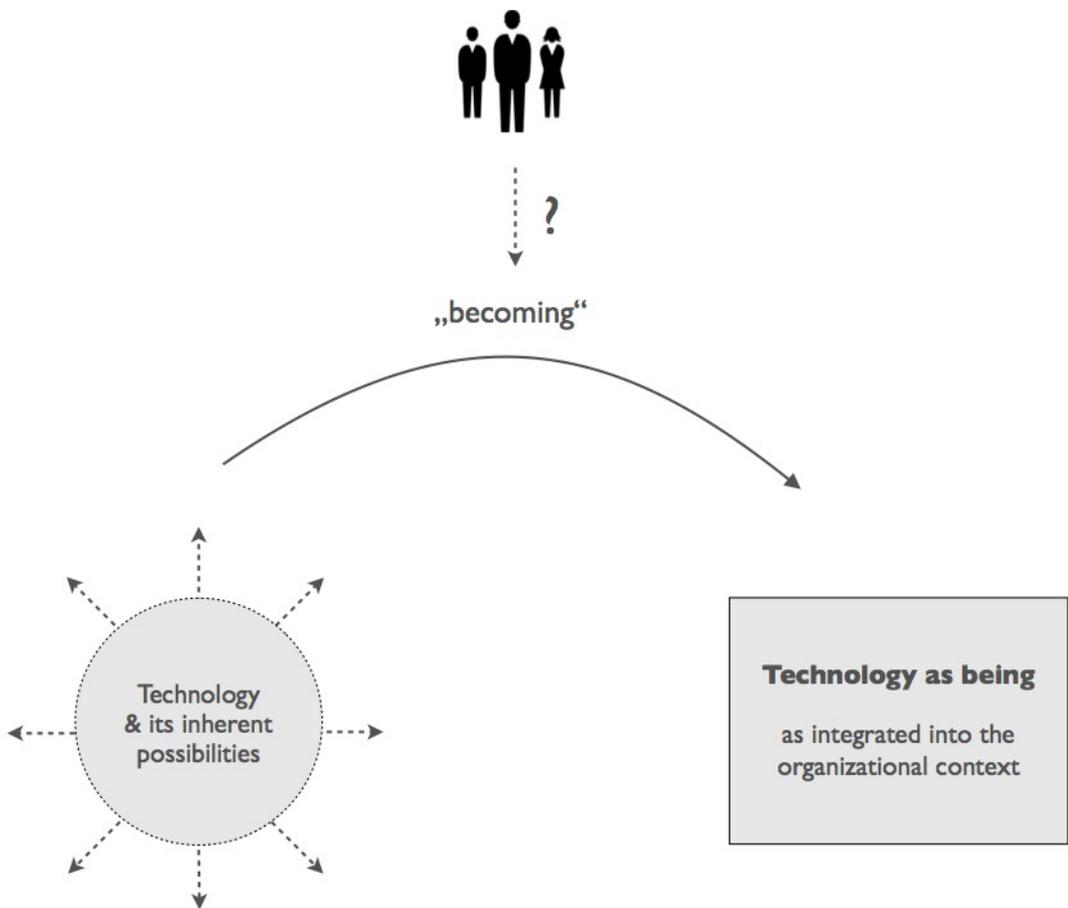


Figure 3. How does the organizational social field influence the "becoming" of technology?

Our basic assumption is that if we really want to make serious statements about the integration of technology into an organization we have to focus on the inevitable fact of any organization: that it fundamentally is a social group, or a set of social groups. An organization is not simply a rational, bureaucratic system but also a complex human practice constituted by social and psychological dynamics. Hence, to know how the integration of technology works we do not only need to know something about the technology or the formal organization. We need also to know something about the organizational culture that significantly influences the transition of technology from becoming to being. The concept of group cultures, elaborated above, may provide a powerful source of analysis in order to understand the process of technology integration at organizations from a new perspective. Thus, we will show exemplarily how the group culture type of a given organization can be connected with the ways in which that organization deals with technology.

- (1) At the university case we deal with a group and group members acting very autonomously and independently. The interviewees saw themselves as part of a rather informal and less structured group where “freedom” seems a higher value than “integration”. One of the interviewees states that in the following way “I do, very consciously, not want to prescribe anything.” Additionally, words like “quickly accessible”, “practical”, “short-term” showed that the given group culture is close to the type of a “crowd”. As described above, a crowd embraces “individual freedom”, “efficiency” and “short-term-orientation” for one’s own sake. And it is especially those three values that fit into their use of technology. In choosing how to use a technology they prioritize efficiency over compliance, i.e. they choose what works best for the task at hand, not what is given to them by organizational directives. Since hierarchical decisions constrain the individual freedom they are not welcome and often bypassed. This is not only confirmed by their self-empowered act in assembling their own project management tools (instead of using the given ones). It is also shown by examples of trying to suggest templates that did not work according to the interviewee (“we tried to suggest standard project templates... but they were far too rigid.”). The efficiency and short-term-goal-orientation is also confirmed by the fact that the members of the organization quickly adapted to other tools as they seemed more efficient for the task at hand, like e.g. “Dropbox”. To use a technology only because it is pre-given from the organization, or even to stick with their own tool even though it is not efficient anymore, would contradict their group culture as a free and self-determined “crowd” of individuals. During the interview, “competition with each other” was mentioned as blocking the open sharing of knowledge. This is easily explained from the point of view of a culture of a crowd. Since members of a crowd mainly form a group in order to achieve their own individual goals, one large encompassing technology where everybody can access all information cannot fit their purpose.

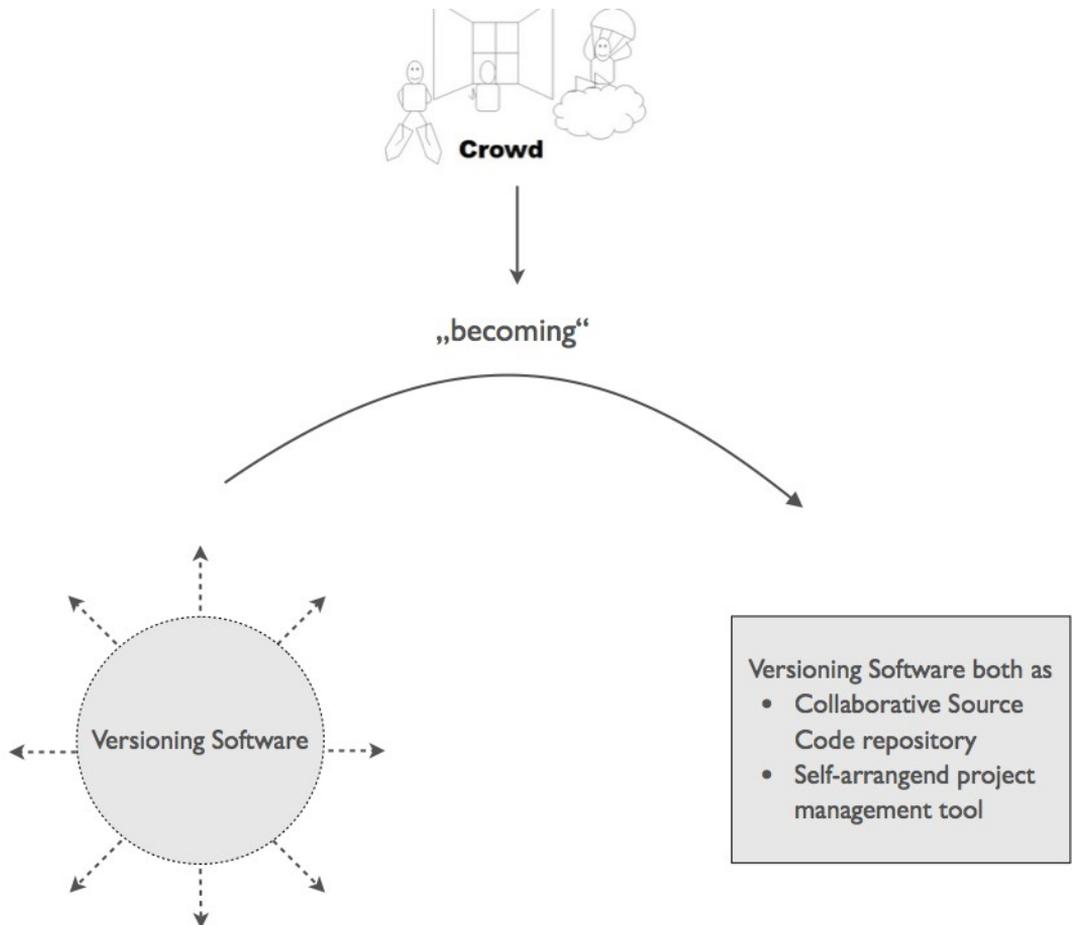


Figure 4. Group culture dynamics and the “becoming” of technology at the university case.

- (2) At the corporation case we deal with a group that is more connected with the formal structure of the organization. Its tighter integration with given standards and rules of the organization situates this group towards the type of a “troop”. From the point of view of closeness vs. distance, both cases are situated at the pole of distance. During the interviews in the corporate case, words like “faster”, “efficiency” and “time-consuming” revealed a strong task and efficiency orientation instead of an orientation at relationships. This is also reflected in the ways how this group deals with technology. As they encountered the problem that given file shares sometimes do not work well (because of security restrictions) they did not abandon that technology and handcraft a new one (like the university “crowd” would have done). Instead, they chose to use another technology given by the organization, i.e. “Sharepoint” (“hierarchy orientation”), and used only the part of it they need in order to solve the problem at hand (“efficiency orientation”). And although using a more suitable file sharing technology like “Dropbox” would have been much more efficient they did *not* go that way. It would have been inconsistent with their group culture and their mutual understanding of how to act within their

social field. An interviewee even formulated the influence and constraints of their own corporate culture explicitly during one interview: Mentioning that interactive technologies like Wikis or discussion forums are not used in the corporation, she says: “This is not working in our case, this is obviously still a question of culture”. This seems to be easily explained by the values a troop culture holds. Members of a troop rely on official channels and stable hierarchies, which give them security for action even if it is at the cost of freedom and creativity. Security is more important than personal freedom in a troop culture. Interactive technologies that rely on equality of everybody (everybody should contribute independent of his/her status) threaten the security of action that is established through clear hierarchies in a troop culture.

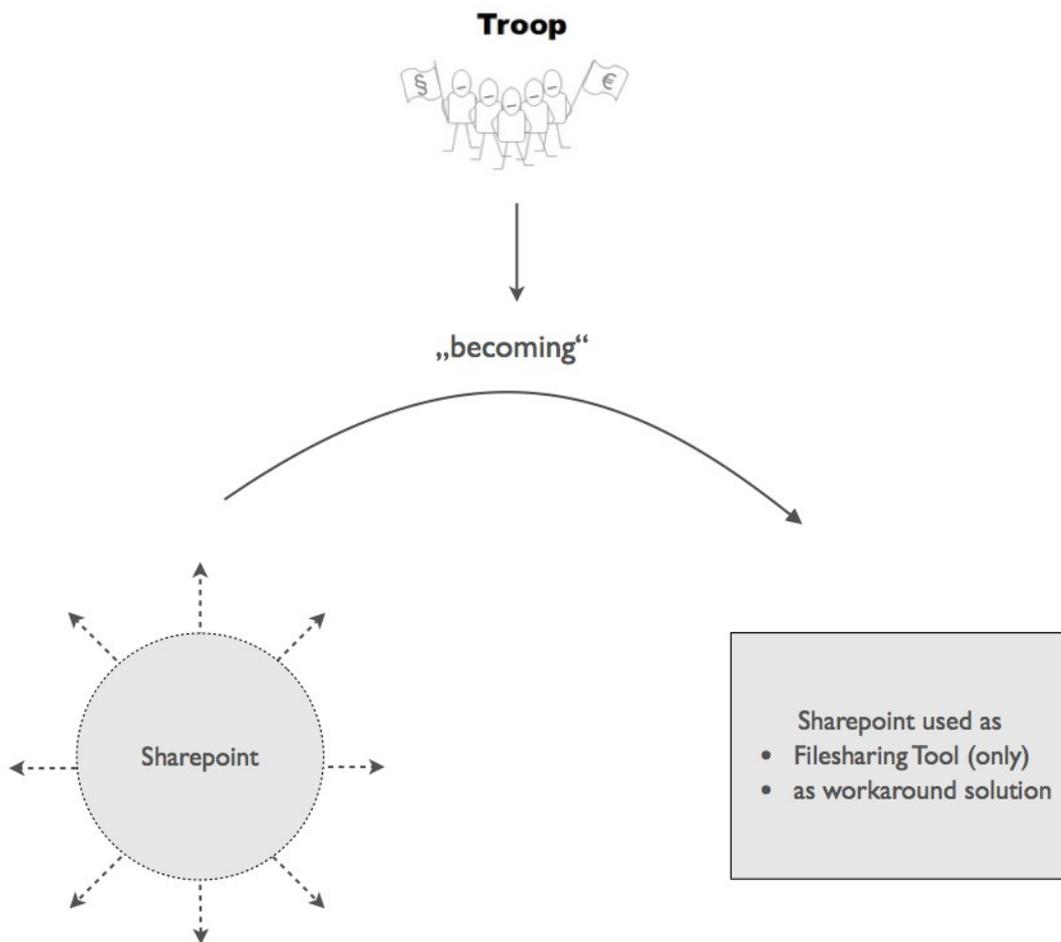


Figure 5. Group culture dynamics and the “becoming” of technology at the corporate case.

9 DISCUSSION & FUTURE RESEARCH

We have exemplarily shown how the group culture type of a given organization might explain the ways in which that organization deals with technology. Based on two theoretical frameworks and an empirical organizational study we were able to get a glimpse of how group culture may influence the “technology culture” within organizations.

However, if we really want to elaborate more on this we need to develop a deeper understanding of the correlation between Stahl’s types of group culture and the way an organization deals with technology (i.e. how a group culture influences the process from becoming to being and integrates technology into the organizational context). Thus, the research agenda for future development in this field could look as follows: We need to develop a more elaborated framework to derive specific “technology cultures” out of each of the four types of group culture. In other words: each type of group culture implies a general approach of how technology is transformed from becoming to being, i.e. how it is integrated in organizational practice. This can only be done by empirical research. Future development has to focus on three activities: (1) to further develop a coherent connection between our theoretical understanding of technology in organizations and the theory of group cultures, (2) to empirically elicit the characteristics of specific “technology cultures” and (3) to relate them consistently to the four group cultures within organizational contexts. To do so we not only need to develop a vocabulary and set of characteristics in how to describe & classify “technology cultures” and “group cultures”, we need to develop instruments for their elicitation. To empirically elicit culture and to classify it is far from being easy. We would also need to find a way to place a specific organization on a spectrum between the different group cultures as Stahl’s model of course deals with “ideal types” which in their pure form are usually not found in reality. Hence, we would have to find a way to quantify and rate the affiliation of an organization (or a part of it) with the different presented types of group cultures.

If we succeed to “measure” an organization’s culture along Stahl’s model and the technological culture within that organization empirically, then we could come up with a framework which connects a specific organizational culture and the dealing with technology in organizations.

A great advantage of such a framework would be to be able to come up with concrete suggestions of specific technologies suitable for specific group cultures. Especially for practically oriented research or for practitioners in general, this could be of relevance as introducing a new technology often fails because of the incompatibility with the organizational culture.

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