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THE SIGNIFICANCE OF ORGANISATIONAL CAPABILITY: THE INTERPLAY OF KNOWLEDGE, COMMUNICATION AND TECHNOLOGY

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Abstract
The paper explores the notion of 'organisational capability'. We argue that an organisation's competitiveness does not only depend on knowledge; communication and technology are other important features. Thus, when developing the organisational capability it is not enough to only focus on knowledge and its management. We also need to encompass improvement of communication and artefact functionality. These parts of the capability – knowledge, communication, and technology – should not be handled separately but as mutually dependent, as expansion of one part often affect the other two.

Keywords: knowledge management, technology, communication, organisational capability.

1. Introduction

In our contemporary society 'knowledge' is frequently discussed as *the* long-termed competitive means of organisations. Knowledge enables people to perform different organisational tasks. As such knowledge is as an intrinsic and basic prerequisite for all organisational existence. However, the existence, use, and need of knowledge itself is not new. The novelty in approaching knowledge lies in an intensified recognition of knowledge as part of the corporate assets. Davenport & Prusak (1998:13) claim *"knowledge may be a company's greatest competitive advantage"*. Drucker (1993) fortifies this by saying that knowledge is the *only* meaningful economic resource. These views give key motivations establishing and treating knowledge management (KM) as a 'discipline'.

One approach that has underpinned many theories on knowledge management is the 'content perspective' (Scarbrough & Burrell 1996). From this perspective, knowledge is viewed as being able to be codified and stored in knowledge repositories, which in turn allows for knowledge to be shared and retained regardless of employee turnover (Wasko & Faraj 2000; c.f. also 'the codification strategy' Hansen et al. 1999). Thus, the focus is to collect, distribute, reuse, and measure codified knowledge (Cohen 1998; Knock & McQueen 1998; Zack 1999). Hereby, discussions often focus on making tacit knowledge explicit, and thereby facilitate the transfer of individual to organisational or even inter-organisational knowledge (Nonaka & Takeuchi 1995). In this connection, IT artefacts are viewed as tools to transfer and disseminate knowledge. Another characteristic of this perspective is the accentuation of 'knowledge markets' including sellers, buyers and brokers of knowledge transactions (see e.g. Prusak 1997; Davenport & Prusak 1998).

Against the content perspective, we can find the 'relational view' of knowledge (Scarbrough & Burrell 1996). Advocates of this view argue that instead of treating knowledge as a free-floating entity, knowledge should be understood as relative, provisional and primarily

context-bounded (Orr 1990; Blackler et al. 1993; Barley 1996). Within this perspective, knowledge is treated in terms of social relations. It is also said that the focus is not on knowledge *per se*, but rather on the process of knowing and the capability to act (Blackler 1995; Brown & Duguid 1998; Schultze 2000). Furthermore, it is said that it is important to view knowledge as reflecting individuals' viewpoints of the world.

The major problem with the content perspective is, according to our opinion, its epistemological standpoint. Knowledge is treated as an object that can be managed independently of the knower; it is regarded as a tradable commodity that easily can be exchanged between individuals. Knowledge seems to be equated with text, i.e. both humans' knowledge and text is regarded as knowledge. This way of treating knowledge, i.e. as an independent asset, leads to reified and objectified views of knowledge, which should be abandoned according to our view. We believe texts and oral communication to be critical parts of organisations, but it should not be confused with knowledge *per se*. Knowledge is not a thing that is amenable to being managed (Quintas et al. 1997). Knowledge is unquestionable human related, and we should avoid reified views of knowledge. As Scarbrough et al. (1999:vii) express we "will have to turn it [read: KM] away from knowledge as a commodity and towards the benefits of people acting knowledgeable" (cf. also Wyssusek et al. 2001). There is also a problem with the relational perspective, as its advocates seem to deny knowledge any substantive content whatsoever (Scarbrough & Burrell 1996). Instead, relational writers limit much of the discussion of knowledge to social relations, which is a too narrow view of knowledge.

We propose that we should avoid pure technocentric views (such as the content perspective), which treat knowledge as a commodity that easily can be transported around in the organisation (cf. further discussion in Goldkuhl & Braf 2001, 2002; Goldkuhl et al. 2001). We should also avoid an anthropocentric view that treats knowledge as pure tacit, subtle and experience-based, and the view of knowledge as restricted to manipulation of social relations (ibid). There is also a need of a more stringent use of language as much of the KM literature represents a quite woolly terminology in this relation (see also criticism in Stamper 2001; Walsham 2001). For example, knowledge is frequently equalled with information and textual descriptions of knowledge; thus given a very vague picture of what knowledge and knowledge management is about (cf. Braf 2001). Furthermore, technology (like information systems) is frequently said to have a secondary role in KM; still, it is often emphasised as *the* solution. Another problem is that the role, and focus on management, of 'knowledge' has resulted in a quite limited view of what makes organisations work. Knowledge is not the *only* competitive means of organisations. It is *one* part, and we believe there are other important parts that constitute organisations' capacity to create value to the clients.

In this paper we wish to broaden the view of KM and talk about the 'organisational capability' as constituted by *knowledge*, *communication*, and *technology*. The purpose is to articulate the notion of 'organisational capability', including its sub-capabilities (constituents) and their inherent relations, and also how organisational capability can be developed (the development of different sub-capabilities and dependencies between them) (part 2 and 4). We will also illustrate development of organisational capability through a case study within an energy firm (part 3). The paper will show the importance of not only focusing on *knowledge* development but also *communication* and *artefacts functionality* improvement. Thus, we will argue for interplay of these capability parts. We also argue for a conscious consideration of the relation to action, i.e. when planning for and expanding sub-capabilities we need to pay regard to what kind of action that aims to be developed.

2. Organisational capability: constituents and dependencies

The concept of 'organisational capability' is not new; it has been much discussed within the area of industrial studies (see e.g. Chandler 1990; von Tunzelmann 1995). One problem is that the notion is given many different meanings, which in turn makes it quite vague as it encompasses such a broad area (cf. Foss 1999). Tell (2000) summaries some characteristics that can be found in the literature, i.e. organizational capability is 1) a higher-order concept, 2) a composite concept, 3) about coherence, 4) primarily internal, 5) about knowledge, 6) about dynamics, and 7) about structures and processes. This shows broad interpretations and does not really clarify the significance of 'organisational capability' (cf. Foss 1999). Tell (2000) conceptualises organisational capability as activities: management-based, technology-based and market-based. We find this a little bit confusing and it raises some questions. For example, *what enables those kinds of activities?*

We argue that the notion of 'organisational capability' is to be understood as a capacity for organisational action; it is what enables organisations to create value for its clients. In this way, organisational capability should be related to action that aims to be facilitated, but the actions as such are not to be equalled with 'capability'. The capability would rather be something that makes value-adding actions possible. Organisational actions follow from organisational capability. The constituents of organisational capability can thus be seen as assets of the organisation. However, we should not encompass all organisational assets as parts of organisational capability. The assets need to be *actable*, i.e. they must be transformable into, or facilitate, action (Cronholm et al. 1999; Goldkuhl & Röstlinger 2002). Then, *what are the constituents of organisational capability?* As mentioned earlier, we regard organisational capability as consisting of knowledge, communication and technology. Those constituents will be further explained below, together with their relations to organisational actions.

2.1 Organisational knowledge

When discussing organisational knowledge our point of departure is not 'knowledge' but 'knowledgeable people' (cf. Scarbrough et al. 1999). This aims to show the necessity of a subject in terms of a human knower, i.e. all knowledge is individual and subjective in the sense that it is part of a person's consciousness. *Human knowledge* is a foundational organisational capability, and it is actable since it can directly be transformed into action. All human actions are based on the knowledge of the actors. Thus, without human knowledge there will be no organisational actions, or any other capabilities. This view of knowledge is rooted in the pragmatist traditions from Aristotle's (1947) knowledge characters of *phronesis* and *techne* to American pragmatists like Peirce (1931-35) and Dewey (1934) who all emphasise the pragmatic nature of knowledge (cf. Thayer 1981).

Even if knowledge is part of an individual's consciousness that does not mean that the knower is always aware of all the knowledge she possesses. Knowledge can be *tacit* (Polanyi 1958), and reside in her *practical consciousness* (Giddens 1984). On the contrary, knowledge can be part of her *discoursive consciousness* (ibid.), and that knowledge that can more easily be formulated by the use of language. Practical and discoursive consciousnesses are seldom completely separated, rather partially overlapping. They are part of actors' inner world, which consists of their knowledge about themselves and external surroundings (Goldkuhl 2002). The understanding of reality is created and maintained in humans' thoughts and actions; as such the external world is interpreted and experienced by individuals (Berger & Luckmann 1966). Thus, the foundation of all knowledge is the world itself, i.e. the society

and everyday life of humans (ibid.). However, knowledge is not always limited to be 'intrasubjective' (individual). A lot of knowledge is 'intersubjective' (collective) in the sense that it is shared among actors. In everyday life we continually interact and communicate with others, i.e. shared meanings are created through social interaction. Organisational existence would not be possible without this kind of intersubjective knowledge.

Then, *what kind of knowledge do actors need?* Well, in organisational settings it is of not much value to have *knowledge about* something if this knowledge is not actable. Actors need to have *knowledge for* action in order to be able to utilise the *knowledge in* action and thereby add value to the organisational performance (Braf 2001).

2.2 Organisational communication

Management of organisational knowledge is often concerned with processes of making knowledge intersubjective (see e.g. Nonaka & Takeuchi 1995). In this regard, language should be recognised as a key instrument for such processes. The articulation of knowledge and experiences is, according to Schutz & Luckmann (1973), decisive for the construction and dissemination of knowledge. This significant role of language is, however, not always acknowledged adequately in the KM literature.

Even if knowledge is part of humans' consciousness and as such subject dependent, a knower can describe what she knows by the use of language. The knowledgeability of people can be *communicated* orally and via documents (texts and pictorial illustrations). The content of different utterances is, however, not knowledge *per se*; they are just representations of what someone knows and wants to share. Yet, the use of language and other semiotic devices to communicate and transfer knowledge represents a critical part of organisational existence and development. To perform something organised (coordinated), communication is usually a prerequisite for this. Organisational institutions of coordinative character (like processes and routines) ensue, at least partially, through language and communication. Ways of working are described to other organisational members.

Communication, in the case of written or recorded in other ways, can defy time and place, and has a *reminding and instructive function* that helps organisations to preserve usable ideas and concepts. One can say that linguistic and pictorial descriptions (signs) can be used as a kind of external memory of organisations (cf. 'organisational memory' Levitt & March 1988). For example, organisations have often formulated working methods and other manuals that clarify what and how actions should be performed. Organisations also express their values and norms in policies documents and other written regulations. Thus, by communication actors get to know how, why, and for whom to act in a certain way. As Taylor & van Every (2000) say, organisations emerge in communication, which is both a medium for knowledge transmission and as a means for interactive and jointly knowledge creation.

However, we should be aware of the fact that it is impossible to describe all knowledge related to a specific issue. Some (background) knowledge will always remain unexpressed. Consequently, there is a potential risk that descriptions of knowledge, no matter if they are expressed orally or written, might lose the intended meaning for the receiver (the new knower) due to her personal interpretation and background. Furthermore, when communicating we do not only express knowledge about objects in the external world; it also encompasses establishment of social and situated relations between humans (cf. Austin 1962; Searle 1969; Habermas 1989). "Communication management" is thus more than management

of codified and expressed knowledge (representations); it is also about "management of social actions and relations".

2.3 Technology and artefacts

As argued above, knowledge is a primary organisational capability that it supported by communication, which is another sub-capability. However, there is also another important type of sub-capability: technology. We distinguish between three types of artefacts: static, dynamic, and automatic tools (see e.g. Goldkuhl & Ågerfalk 2002). A building is seen as a *static tool*. It is used by humans, but it has no active functioning by itself. Still, it is part of an organisational infrastructure that support, or restrain, actions. The facilitative character of buildings can be compared with other artefacts that have directly actable properties. For example, production equipment is more than a facilitating infrastructure; machines for manufacturing make things happen (see e.g. Latour 1992). We can here differentiate between two types. A *dynamic tool* – e.g. a truck – is used by a human. A truck has a capacity for moving (i.e. an active function) when manoeuvred by its driver. An *automatic tool* – e.g. a production robot -works by itself; it only needs an initiation by a human. A static tool does not perform any actions; it facilitates actions. A dynamic tool performs action in cooperation with human actors. An automatic tool can perform actions by itself; according to the functionality designed by humans. For many organisations technology is essential to their production. Actors use technical equipment (such as information, manufacturing and transportation technology) to produce goods and services.

A computerised information system (IS) is another example of an artefact that enables and performs actions (as a dynamic or automatic tool). However, within the area of knowledge management technology is often regarded as a pure facilitator. We agree that information technology, properly applied, might support KM work, but IT should not only be seen as a tool to store data (or "codified knowledge"). It is important to acknowledge IT systems as performers of organisational actions, thus having a capability for such actions.

Our view of technology should not be interpreted as reified or deterministic. Quite the reverse, technology should not be given properties of acting and developing totally of its own. Still, we should also avoid reducing all technology to mere instruments (facilitators) of human action. Some artefacts have properties that make them function partially as independent devices and they do not need constant human supervision (Goldkuhl et al. 2001; Goldkuhl & Braf 2002). This view contradicts theories on KM in the way that they sometimes exaggerate the role of knowledge to a degree that *knowledge is* what constitutes the capability of organisations. This, what we call, claim for totalisation of knowledge neglects other forms of capabilities – e.g. the function of technology – that we believe actually do exist in organisations.

2.4 Dependencies between sub-capabilities

Above we have described three main constituents of organisational capabilities: human knowledge (intrasubjective and intersubjective), communication (oral and written signs), and technology. Those constituents cannot be handled totally separated from each other; there are important relations that need to be considered (see illustration in figure 1 below). The primary constituent is human intrasubjective knowledge, i.e. without knowing subjects there will be no intersubjective knowledge, no artefacts, and nothing fruitful to communicate. Organisations do seldom work without any collective knowledge that can guide organising and coordination, thus there is a need for intersubjective knowledge.

Organisations also need to facilitate the production by the use of technology. In turn, that requires individual, or most often collective, knowledge to be manifested in the repertoire of artefacts' functionality. In this way, technology is a means to manifest the knowledgeability and intentions of the actors together with the prevailing norms of organisations. Consequently, different artefacts have different predefined capabilities according to their different purposes. Human knowledge can also be expressed in orally or written signs which functions as a reminder or instruction for creation or maintenance of individual knowledge, as well as a prerequisite for action. As shown in figure 1 the different sub-capabilities are also related to organisational actions, i.e. they enable different kinds of actions.

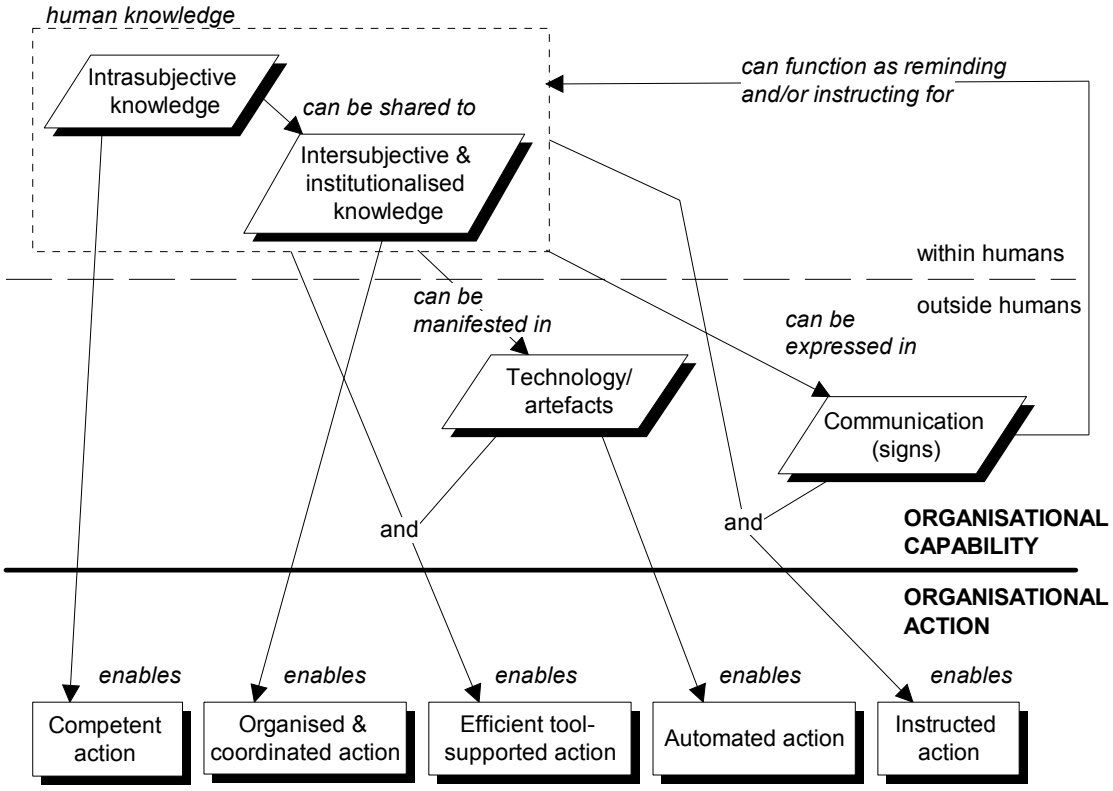

Figure 1: Organisational capability: Constituents and relationships to action. (Modified from Goldkuhl & Braf 2002).

3. An empirical case

The following empirical data derives from a case study performed within an energy firm. The initial purpose of the study was to investigate and contribute to development of the firm's competence maintenance (knowledge management). During the research project it became clear that this was a too limited approach. Thus, the purpose was broadened to investigate 'expansion of the organisation's capability', which also have been the primary unit of analysis. A number of interviews and observations have been made. Several change scenarios (one of them are presented below) were investigated and this was done from an organisational capability perspective, i.e. the inquiry focused on the roles and effects of sub-capabilities. In order to structure the data the change scenarios were divided into four phases: decision, anchoring, implementation, and evaluation. This was done because when analysing the data it became clear that the capability constituents had different functions within different stages in the change work. It was shown that this was a good way to understand

what happened and it facilitated the understanding of the need for a balance and interconnection between the constituents.

3.1 Decision phase

During this phase that decision of the change was made. The involved parties (decision-makers) were the representatives of the business management all together, even if the personnel manager and the president were in charge of this particular change work. The change concerned a move to new locals and the intentions was to create a flexible, open-plan, and paperless office. The reason for this change was due to a fusion of twelve smaller business units. Thus, a primary challenge was to get those together into one unified and coordinated organisation. Therefore, it was decided that they should have a landscaped office with no personal desks. It should be flexible in the sense that people should change places and take a desk that was free at the time they came to work. This was meant to facilitate learning and get people to know each other fast. The intention of creating a paperless office was to reduce the amount of paper documents that was collected by the employees, and instead make the actors use IT systems for data storage. This was supposed to secure that critical documents (knowledge descriptions) were not to be lost when people left the firm. The idea to enhance the use of technology also aimed at making information accessible for everyone at the same time, i.e. no one should be able to make complaints concerning not getting needed information if all information was in the intranet or in other databases.

In terms of organisational capability all constituents were involved in this change decision. The open-plan office design (i.e. part of the infrastructure) aimed at expanding intrasubjective and intersubjective knowledge, as well as improving communication between the employees. The enhanced use of IT was mainly considered as a means to communicate and make instructions and other information easy accessible. In general, no relations between the capabilities and actions were made explicit. Another issue that was not really focused was the need to improve a collective use of IT (i.e. artefact functionality), including the knowledge needed for using IT.

In sum, the change aimed at creating a new type of office technology that expanded intersubjective knowledge through improved artefact mediated communication, both by the open landscape and IT artefacts. However, they did not include the need for improved IT artefact functionality and related know-how.

3.2 Anchoring phase

The message to the employees was short and straightforward. They were told that a flexible, landscape office was to be created, and that this should enhance learning and communication. The intentions concerning enhanced IT use and reduced paper documents were not mentioned. That was thought to occur automatically as the employees would no longer have the space to store bunches of files and folders; they should just get one kneehole table each. Consequently, the whole picture was not communicated, and therefore no real intersubjective knowledge concerning the reasons and purposes of the change were created. More or less all the employees felt that the change was induced on them, and that they did not get the opportunity to influence – the change was just a fact.

It is doubtful if a clearer message would have made the employees less change resistant, as they really did not want to loose their freedom and integrity of having own rooms. Still, if the message communicated had been richer this would at least have limited the number of speculations. It would also have created deeper and broader intersubjective knowledge

concerning what was to be happened, why, how, when, and for what purposes. Thus, the management did not take advantage of creating the necessary knowledge capability as a prerequisite for implementing the change. In other words, communication and knowledge management for the change was more or less neglected.

3.3 Implementation phase

An open-plan office was created and this was expected to, more or less, automatically result in enhanced learning and communication. One condition that put some limitation on the implementation was that the employees tended to chose desks close to the nearest colleagues, i.e. the persons one already knew. The intranet was also developed as a means to make news and general information accessible. Thereby, improvement in artefact functionality was included in the implementation phase, even if it was not made explicit during the previous phases; it was rather something that had been realised on the way.

One issue that was not focused was the need for intersubjective knowledge about how to use the intranet and other systems to store documents. A number of different databases existed, but they did not have any well thought-out structure and were thus hard to use for retrieval. What was needed was routines and structure for documentation together with enhanced maturity in using technology. There was also a need for facilitating the new way of seating with at least partly new ways of working. In other words, the belief, that the landscape office would create a learning environment by itself, showed to be rather naïve.

During this phase there was, thus, a discovery of the need for enhanced artefact functionality (intranet), but unfortunately there were not enough efforts for improving the corresponding know-how. Furthermore, they did not realise that the arrangement of the office landscape (as an important enabler for coordinated actions) needed to be in harmony with new ways of working, i.e. there was a lack of congruency between these sub-capabilities.

3.4 Evaluation phase

Within the research project an evaluation was made about two years after the implementation. A common opinion was that the open-plan office had facilitated the expansion of intrasubjective and intersubjective knowledge. This showed that the negative and distrustful feelings for the office design had somehow changed during the way. Several employees said that they had a much broader understanding of what people did, than they had have before. It was also a good way for newly employed to get to know the business and their colleagues. The openness made it very easy to ask someone a question and get a prompt answer. The effects were, however, not only to advantage. Some meant that the office design had reduced work efficiency, as it resulted in such a high sound level. It was also said that the close seating reduced the number of spontaneous and more personal talks between employees. Those kinds of talks could be about feedback or other issues that required some privacy. Consequently, this kind of caring and learning from feedback did decrease; as such it did put some limitation on potential knowledge expansion. The management had not predicted these negative effects; they just had not thought about them.

Concerning improved communication through enhanced use of IT and written descriptions there was no obvious effect, i.e. the intention to enhance the number of linguistic descriptions stored in the systems was not attained. One possible explanation to this failure was that this intention was not anchored. It was also due to lacking knowledge about artefact functionality and routines for this kind of activities. Thus, the opportunity to improve instructed actions and thereby further expand the stock of knowledge was quite limited. In sum, part of the

intentions were attained, some part was not. According to our analysis, the main reasons for not being real successful was due to a lack of attention to the capability constituents and their relations to each other and to different organisational actions.

4. Development of organisational capability

Development of organisational capability means development of one or more sub-capabilities (Goldkuhl & Braf 2002). Often organisational change endeavours involve development of several sub-capabilities in a mutually supportive way. Development of (intrasubjective and intersubjective) knowledge implies what is often called organisational learning. Explicit organisational learning may take place, when there is an arrangement to enhance new knowledge (e.g. participating in courses, reading books or other kinds of instructions acquisition). Implicit organisational learning is the continuous learning that takes place as a result of ordinary organisational action. This kind of learning is usually not explicitly intended. It is a secondary effect of organisational action, and it is due to the reflexive character of human action (Giddens 1984). When we as humans perform actions, these actions act back upon us, when we experience the actions and their results and effects in more or less conscious ways.

The development of the sub-capability technology is often performed through procurement, i.e. an artefact is externally furnished through purchase. Some artefacts may be developed or at least modified or maintained by the organisation itself. Development of communication can concern communication objects, communicative patterns, or organisational language as a communicative means. A communicative object is something to be used for communication, i.e. a message. Development of a communicative object can be writing of an instruction manual, issuing an organisational policy or other kinds of texts, which are planned to be used and reused. Such communicative objects (signs) will have, as said above, a memorising function in the organisation. Communication development can also imply introduction of new communication channels and forums, e.g. an intranet and a landscape office. In such cases, there must to a parallel development of communication and technology.

Development of an IT-based information system, means usually the development of several organisational sub-capabilities. An IT system is a separate technological artefact (it is thus a technology development). But an IT system is a system for communication. It is a producer and keeper of messages. Development of an IT system is usually an organisational inquiry, which both presupposes and results in organisational learning. Development of knowledge is usually, as said above, a prerequisite for development of external sub-capabalities. This means that IT development almost always implies change of all types of organisational sub-capabilities (knowledge, communication, and technology).

When applying a organisational capability perspective we need to keep in mind the different relations between the constituents (see figure 1 above). Development and maintanance of knoweldge is often dependent of the use of communication and technology. The improvement of communication depends on people having something to communicate, i.e. knowledge about, for, in and through action (Braf 2001). Improvement of communication is also dependent on the use and development of proper artefact functionality. In turn, development of artefacts is dependent on technical knowledge as well as on business knowledge (i.e. problems, strenght, and needs of the organisation). Then, to get artefacts to be used there is a need for understanding how to use different functionality. We also need to have in mind that the different sub-capabilities enable different kinds of actions. Thus, when

thinking about development of one of the capabilities it is not enough to pay attention to the influence on or by the other two, but also on organisational intentions and the actions required to reach them.

5. Conclusions

Development of organisations is about expanding the organisational capability, which in turn is exercised in organisational actions as a means to create valuable products to the clients. In this paper we have defined the notion of organisational capability as consisting of three fundamental constituents. These sub-capabilities should also be related to their ontological status, i.e. they exist within different realms of the world (cf. Goldkuhl & Braf 2001; Goldkuhl 2002):

- Human knowledge
    - Interasubjective realm: intrasubjective knowledge
    - Intersubjective realm: intersubjective knowledge
- Communication
    - Linguistic (sign) realm: oral and written communication
- Technology
    - Artefact realm: artificially made material objects and their functionality

The development of the sub-capabilities should not be performed as three separate practices, but as mutually dependent and well integrated. Expansion of one of the parts often has consequences for the other two. This has been illustrated through our theoretical conceptualisation, and the empirical case study.

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