

CONTEXTUAL KNOWLEDGE ANALYSIS - UNDERSTANDING KNOWLEDGE AND ITS RELATIONS TO ACTION AND COMMUNICATION

By Göran Goldkuhl^{1,2} & Ewa Braf²

¹CMTO, Linköping University, S-581 83 Linköping, Sweden; phone +46705529815;
fax +4613284435 {e-mail ggo@ida.liu.se}

²Jönköping International Business School, P.O. 1026, S-551 11 Jönköping, Sweden,
phone: +4636156178, fax: +4636121832 {e-mail ewa.braf@ihh.hj.se}

Abstract

The paper explores an approach for contextual knowledge analysis. This approach incorporates a conceptualisation of organisational knowledge by the use of knowledge diagrams, and has been applied in a case study within home care. We claim that contextual knowledge analysis is important when developing KM oriented information systems, as well as for other kinds of organisational change and development.

1. Introduction

Discussions on the management of knowledge are often focused on externalisation and codification of knowledge. One explanation of this focus is that practitioners, as well as researchers, strive towards finding helpful tools in order to leverage and distribute knowledge in organisations, i.e. develop and utilise actors' subjective and intersubjective knowledge. The underlying idea is that knowledge is considered to be the most valuable resource for competitiveness, and therefore organisations need to manage this resource in a better way.

One consequence of this approach is that theories on knowledge management (KM) apply quite an abstract view of knowledge, and that they sometimes seem to miss the functionality of knowledge. Organisational knowledge is developed for action, and is used in action. Therefore, developing IT-based systems for KM requires a careful consideration of the kind of actions performed in the particular business practice. Thus, we claim the great need for a contextual knowledge analysis before designing and implementing those so-called "knowledge systems". Otherwise, there is a risk that the KM systems will not generate desirable effects.

The purpose of this paper is to describe and argue for the importance of a contextual knowledge analysis. This kind of analysis elucidates the performative function of knowledge and its relations to action and communication. This kind of understanding is, among other things, important for the purpose of developing knowledge oriented information systems.

The paper argues for a pragmatic view of knowledge in organisations, and is divided into six parts. From a pragmatic view we review some theories and approaches within knowledge management (part 2). Then we explore and describe the notion of contextual knowledge analysis (part 3). Part 4 presents an empirical application of contextual knowledge analysis in

a home care project. In part 5 we will discuss the primary and pragmatic consequences of our approach. Our conclusions and knowledge contributions are summarised in part 6, i.e. the final part of this paper.

2. Knowledge in organisation – a pragmatic view

At present, organisations focus a lot of attention to the role of knowledge in organisations. Still, the existence and use of knowledge itself is not new. Knowledge is always human knowledge, and enables people to perform different organisational tasks. In this way we can say that knowledge is what makes organisations go. The novelty in approaching knowledge lies in an intensified recognition of knowledge as part of the corporate assets. For example, Davenport & Prusak (1998:13) say, "*knowledge may be a company's greatest competitive advantage*". Drucker (1993) fortifies this by saying that knowledge is the *only* meaningful economic resource.

Viewing knowledge as an asset implies efforts to utilise, leverage, and deploy knowledge in organisations. Out of this context, what is it to be done in order to handle knowledge? Here, we might need to consider different kinds of knowledge. Literature on knowledge management often builds on Polanyi's (1958) view of knowledge, and distinguishes between tacit and explicit knowledge. Nonaka & Takeuchi (1995) describe tacit knowledge as personal, context-specific, and hard to formalise. Hereby, this kind of knowledge is highly rooted in action and experience. Tacit knowledge can be restricted to just one individual, or be shared within a group of people. Explicit knowledge, also regarded as codified knowledge, refers to knowledge that is transmittable in formal, systematic language (Nonaka & Takeuchi 1995; Davenport & Prusak 1998). According to Zack (1999) explicit knowledge can be of several forms, i.e. declarative knowledge, procedural knowledge, and causal knowledge. Explicit knowledge could also range from the general to the specific, and KM concerns both these functions of knowledge (ibid).

One central aim of several KM-related theories is to give support to the transformation of tacit knowledge into explicit knowledge in order to simplify the dissemination and sharing of knowledge in organisations. It is not until then that organisations can take real advantage of the possibilities given by information technology (IT). Hereby, many authors mean that knowledge needs to be codified for the purpose of being stored in a so-called KM system (see e.g. Davenport & Prusak 1998; Zack 1999). This sounds reasonable; still, we need to ask what we mean when speaking about codification? According to Zack (1999) the codification starts with the acquisition of knowledge, which is subsequently refined and stored in a repository (c.f. the externalisation process, Nonaka & Takeuchi 1995). The acquisition is either about *creating* information or knowledge, or about *acquiring* knowledge from various internal and external sources. The co-workers are then supposed to retrieve required knowledge from the repository.

We consider codification as a process of expressing and writing down linguistic conceptualisations. Codification is a process of producing texts. By using language in writing we can give descriptions and expressions of knowledge an existence of its own, i.e. separated from time, space, and the initial knower. However, as we consider knowledge as rooted in human's consciousness, isn't there a risk that this "independence" contradicts our basic assumption? Looking at KM-related theories, there is a tendency that the focus on codification and externalisation of knowledge might result in a far too isolated and narrow view of knowledge, and how knowledge can be managed. One substantial drawback is that

some KM-literature seems to treat knowledge as an object that can be managed independently of the knower. Some KM-literature seems to equate actor knowledge and text, i.e. both knowledge and text are considered and treated as knowledge. However, 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 this we “will have to turn it (read: KM) away from knowledge as a commodity and towards the benefits of people acting knowledgeable”.

Still, even if we consider knowledge as human related, a knower can describe her knowledge by the use of language. The articulation of knowledge and experiences is, according to Schutz & Luckmann (1973:100), decisive for the construction and dissemination of knowledge. Hereby, language plays an important role for the codification and sharing of knowledge, and this role needs to be considered explicitly. A description of knowledge, no matter if it concerns oral or written utterances, can be used as a mean to transfer knowledge between individuals. Descriptions should, however, not be confused with knowledge as such; descriptions are just representations of someone’s subjective knowledge, and not knowledge *per se*. We also assert that it is impossible to describe all knowledge related to a specific issue. Some (background) knowledge will always remain unexpressed. Consequently, the potential risk is that a knowledge description might lose the intended meaning for the receiver (the new knower) due to her personal interpretation.

Turning back to the codification process, we wouldn’t say that the process starts with the acquisition itself (c.f. Zack 1999). The starting-point ought to be the *identification of a need* for codification of some certain knowledge. This knowledge then needs to be identified, articulated, codified, and stored in a KM-system. Such a system can be labelled as a knowledge repository (Zack 1999). However, one must always remember that such a “knowledge repository” functions as a means (part) of a communication and knowledge transfer process, which in turn is part of a knowledge deployment strategy. At the end, the purpose of different KM-efforts is to enhance people’s ability to act in a competent way (c.f. Scarbrough et al 1999).

In order for people to act knowledgeably they need to have different types of knowledge. For example, they need knowledge about things (what-knowledge). This concerns knowledge about: the world, objects in the world, which possible actions to perform in the world, and in relation to whom. What-knowledge can be compared to Aristotle’s (1947) *episteme*, which is knowledge about facts (e.g. related to a particular working context). It is, however, not enough to just have *knowledge about* things and events. To act knowledgeably, people also need knowledge concerning *how* and *why*. These types of knowledge descend from Aristotle’s knowledge characters *techne* and *phronesis*, and both emphasise the pragmatic dimension of knowledge. The difference between the two is, while *techne* concerns skills and ability to produce something (i.e. productive knowledge), *phronesis* is more focused on practical sense making and aims at enhancing humans’ well being (i.e. performative knowledge). Those latter types of knowledge are also ingrained in the pragmatic traditions of Peirce (1931-35), Dewey (1910), and Argyris & Schön (1996), who emphasise how acting and actions penetrate human consciousness and human knowledge.

A related issue concerns general versus specific knowledge as two important functions of knowledge (see e.g. Zack 1999). We ask ourselves about the possibilities of generalising knowledge. Isn’t knowledge always relative to the specific context in which it is developed and used? Lave & Wenger (1991) explicitly take this stance and argue that many theories on

learning have ignored its quintessentially social character. They mean that learning is about increasing participation in communities of practice and concerns the whole person acting in the world. Another author who emphasises the social aspect is Hutchins (1996). He means that social cognition is always situated in a complex sociocultural world and cannot be unaffected by it. This means that knowledge and knowledge creation can never be seen in isolation; it must be seen as part of a broader system of relations between individuals, activities and understanding.

In order to clarify our understanding of general versus specific knowledge, we would like to refer to Ogden's triangle (Ogden & Richards 1956). When a person knows something, this something always refers to some phenomenon in the world, which is related to the person's experiences of being and acting. The knower can express her thought/knowledge by using different linguistic expressions. Hereby, when discussing knowledge we need to involve both the individual's understanding, the words used to express the understanding (c.f articulated/codified knowledge), and the referent in the world that have given rise to the knowledge. In this way all knowledge is contextual and intensional in the meaning that it is related to something in the world surrounding the specific knower.

To summaries this part, we agree on the situated characteristic of knowledge, together with the importance of having access to productive and performative knowledge, as well as what-knowledge. Those are all critical aspects for a pragmatic view of knowledge and we stress the absolute necessity of knowledgeable people in order for a workpractice to function. We have also argued for the role of language and communication when sharing and deploying knowledge. From this point of view we need to ask ourselves: How can actable knowledge be identified, and how can different types of critical actable knowledge be acquired? We believe this is two essential questions in order to work out how we can develop, leverage, and re-utilise knowledge in organisations.

3. Contextual knowledge analysis

Contextual knowledge analysis means understanding knowledge in context – how knowledge is situated in organisational contexts. To perform contextual knowledge analysis is to explore different organisational situations where knowledge is created, transferred and utilised. We pay interest to the origin of knowledge, the deployment of knowledge, and the utilisation of knowledge in action.

Our pragmatic perspective guides us to focus on the utilisation of knowledge in organisational actions. An action is performed in some organisational situation. In order to act, the actor must have knowledge about the situation – declarative knowledge. The actor must know *what* to do, i.e. *what actions* to perform. She must know in *what* kind of *situation* she acts within. This kind of situational knowledge will also include knowledge about *circumstances* (*what* kind of *objects*) within the situation (cf Dewey, 1938 for a discussion on knowledge about a situation and its objects/constituents). The actor also needs knowledge about *how* to perform an action – procedural knowledge. To act rationally in an organisational situation, the actor must have knowledge about goals and values – motivational knowledge. This knowledge about *why* can concern both the *what* and the *how*; i.e. values and norms concerning both the action itself and the intended result and effects. These distinctions (about *what*, *how*, and *why*) follow mainly the categories of Zack (1999). To this we would like to add knowledge about *who*, i.e. knowledge concerning *which persons* certain actions will be performed in relation to.

These different aspects of knowledge in an organisational situation can be described by using a “generic model of knowledge utilisation in an organisational situation” (figure 1), which we introduce here. This model is based on a generic model of social action, earlier presented in Goldkuhl & Ågerfalk (2000). We comment briefly on our model: A knowledgeable actor performs an action in an organisational situation. The acting results in an action object¹. This result is directed towards one or more recipients. The action model differentiates between action result (which lies within the range of the actor) and action effects (which arises from the result influences on the recipient and her use of the action result).

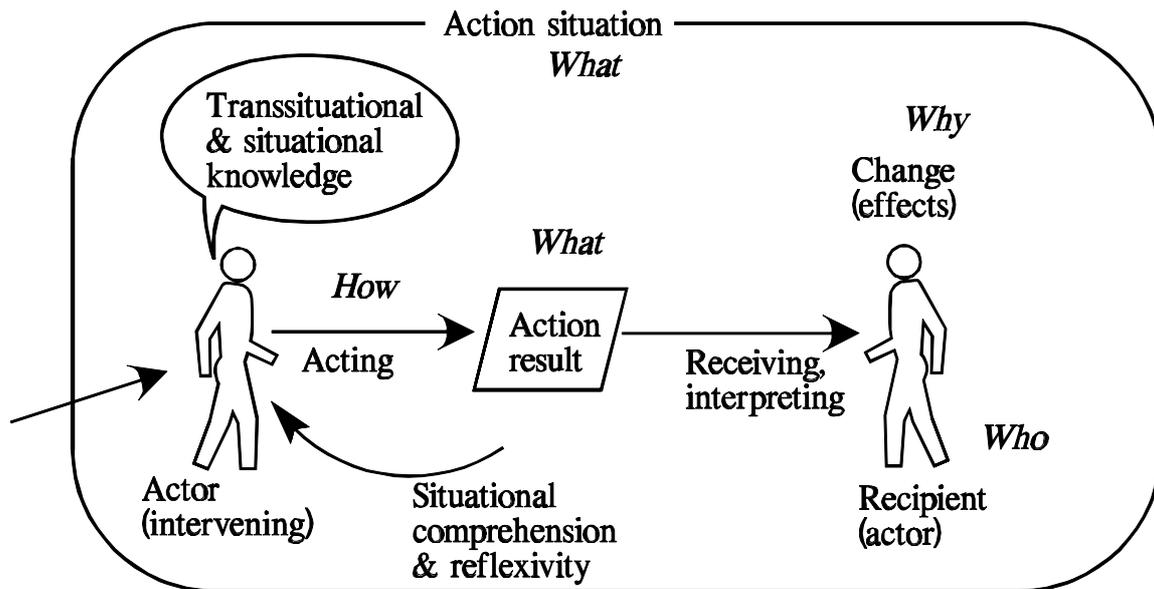


Figure 1 A generic model of knowledge utilisation in an organisational situation

The actor utilises knowledge for performance of the action. She must have adequate knowledge about the situation in order to act in a competent way. This situational knowledge emanates both from the actual situation (i.e. her observation and comprehension of the situation) and from earlier knowledge concerning similar situations. The actor brings transsituational knowledge into the situation. This kind of knowledge can be both generalised knowledge abstracted from earlier situations and particular experiences (memories) from earlier situations. Transsituational knowledge does not need to be self-experiential in relation to the actor herself. It can be learnt from other persons; both from education and from natural work settings.

Some part of this transsituational knowledge, which is brought into the situation, will be transformed into situational knowledge, e.g. knowledge about action expectations and assignments and earlier knowledge about different circumstances in the situation. There are other parts of the transsituational knowledge that will function more as background knowledge in the situation and thus not being transformed into situational knowledge.

¹ A material action results in a material object. A communicative action results in an (oral) utterance or a (written) message; cf Goldkuhl & Ågerfalk (2000) and Goldkuhl (2001) about this action model which encompasses both material and communicative actions.

Knowledge used in an organisational situation can be of different *generality*. There can be knowledge concerning *specific instances*. There can also be knowledge of high generality, i.e. knowledge about the *typical*. We distinguish thus between:

- knowledge about the typical (i.e. general knowledge)
- knowledge about the particular (i.e. specific knowledge)

We recall the differentiation between situation and objects in the situation (see above). This means that it is possible to distinguish between more fine-grained levels of generality. We can distinguish between knowledge about

- typical objects in typical situations
- particular objects in typical situations
- particular objects in particular situations

This principal kind of differentiation can make it possible to introduce even more levels of generality.

Our approach to contextual knowledge analysis includes

- A differentiation between creation, transfer, and utilisation of knowledge
- A generic model of knowledge utilisation in an organisational situation
- A distinction between transsituational and situational knowledge
- Different types of action orientation of the knowledge (what, how, why, and who)
- Different degrees of generalities of knowledge

Parts of this approach have been used in an action research project. We will illustrate our approach by presenting some highlights from this action research in the next part of our paper.

4. Performance of contextual knowledge analysis: Development of home care services

The approach for contextual knowledge analysis has been employed within a case study. The case study is a workpractice development endeavour in a municipal home care unit for elder people. One governing idea behind this development project was the improvement of the management and transfer of knowledge about clients, assignments, and work procedures within the home care unit. The workpractice development project aimed to introduce IT as an enabling force together with development of competence and knowledge as organisational assets.

The case study has been performed on an action research basis by the authors together with several other research colleagues². Different qualitative research methods have been used: Interviewing directors and home care assistants, observation, collection and analysis of documents. The home care service is to a large degree dependent on tacit knowledge and implicit communication between employees. A closeness to the empirical phenomena was necessary in order to gain reliable data. A participatory approach has been taken, including active cooperation with the personnel at the home care unit.

² Experiences from the case study have been reported earlier in Goldkuhl et al (2001) and Goldkuhl (2001).

In our investigation we made different analyses of several documents. We have for each document identified and analysed³

- the contents and the used vocabulary,
- the producers and users,
- the communication functions,
- the effects in terms of knowledge contribution, enabled actions and subsequent consequences.

Some of the documents can be labelled as formal documents. One example is the order for personal home care from the client and approved by the social welfare administration. The personal care plan is another example. Care journal notes must be kept according to regulations.

The home care team has developed - in an evolutionary manner - documents for the daily care. Week and daily schedules and other documents are used. These more informal documents are often handwritten, and thus sometimes hard to interpret. There are also often additions and changes made on the documents. There are no exact rules for what to write in different documents. The terminology is rather fluid. Many documents lack a clear rubric and after interviewing the staff it became obvious that some documents lack a common name. From an information systems perspective it is easy to be critical towards this fluid and vague communication and document treatment. Anyhow, the routines are working. The home care assistants are experienced and know each other well. They seldom make any mistakes.

There are programs for improved quality assurance in the home care service. There are initiatives made to have a more ensured home care service. The home care routines should be designed in ways making it possible even for inexperienced substitutes to perform work in a proper way. This necessitates a redesign of several work documents and the introduction of prescriptive routine descriptions.

One main objective for the home care service is the individualisation of the home care. To perform home care is not a standardised service. The home care unit strives for maximum individualisation. The elder clients should live their lives in their own desired ways. The home care assistants should support the clients to live in their own ways. In order to do this there is great need for knowledge. The home care assistants must have a good understanding of every person, about their personal life history, their current social and medical situation and their habits and needs. This partially changing knowledge must be transferable to all members of the home care team since there is not one single assistant who takes care of a particular elder.

These two partially overlapping goals - an individualised and quality assured home care service - are governing the workpractice today and the goal achievement should be improved in the future.

We have applied our approach for contextual knowledge analysis in the home care project. This involves the perspective and some of the categories described in part 2 and 3 above. This involves also a simple and powerful modelling technique – the *knowledge diagram* - which can be used in practical development work. A knowledge diagram describes different types of

³ This kind of approach follows a language action perspective on documents and communication; cf Searle (1969) and Goldkuhl & Ågerfalk (2000).

knowledge (different degrees of generality and action orientation) and how these knowledge types are related to each other and to different organisational actions. The knowledge diagram also describes the knowledge origin in communication and experiential action.

Our investigation about the knowledge and document utilisation was based on the elaborated knowledge categories (part 3 above). We differentiated between different degrees of generality:

- knowledge about *typical situations* for *typical clients*
- knowledge about *typical situations* for *particular clients*
- knowledge about *particular situations* for *particular clients*

We also differentiated between the action orientation of knowledge:

- knowledge of *what* to perform (declarative knowledge)
- knowledge of *how* to perform (procedural knowledge)

We have related different documents to different knowledge types. This has been visualised in a knowledge diagram (figure 2). This knowledge diagram does not only relate knowledge to documents, but also - according to our pragmatist position - it relates knowledge to action. We were interested in what different types of knowledge are necessary for the organisational action of performing home care services to particular clients.

A home care assistant must have knowledge on what to do and how to do this for a particular client in a particular situation. This knowledge is based on other knowledge types. There must be general procedural knowledge, i.e. knowledge on how to perform service in *typical situations* for *typical clients*. There must also be knowledge about this *particular client*. This knowledge can be divided into two groups. First there must be general knowledge about this client, about his general situation and needs. We call this knowledge about what to do (recurrently) for a *particular client* in *typical situations*. But the home care assistants need also knowledge about *particular* (non-recurrently) *needs* in *particular situations*. Knowledge about earlier service situations forms a basis for all these knowledge types.

In the knowledge diagram we have described these different knowledge types. We have also described their bases in observation, experiences, oral communication and documents. The general procedural knowledge - how to do in typical situations for typical clients - is based on manuals (routine descriptions), earlier training and experiences from earlier service situations. Knowledge on what to do for a particular client recurrently, is based on several documents: the client request, the individual care plan and schedules describing recurrent demanded service measures. This knowledge is also based on the knowledge from earlier service situations with this particular client. Besides this recurrent demands for a particular client, there can be special demands for service actions at a particular service visit. One example is that an elder must be escorted to a doctor. This kind of measure can be documented in the daily schedule as a special note. There are other sources for this kind of knowledge; from journal notes, from other written messages or from oral communication with other home care assistants or directly with the client.

The knowledge diagram has a focus on different knowledge types, their relations, their bases (documents etc) and the utilisation for organisational action. One key idea of this type of diagram is to differentiate between knowledge on different levels of generality, i.e. typical vs situational knowledge. It is important that knowledge management is not be restricted to knowledge on a typical level. Service clients do not like being treated as typical clients. They

want to be treated individually, which demands particular knowledge about clients. The knowledge diagram differentiates also between declarative (what) and procedural (how) knowledge.

In the knowledge diagram we have described the relations from documents to knowledge. We do not describe the reverse, i.e. the relations from knowledge to document. The knowledge diagram can be "inverted" to a document diagram describing how knowledge, experiences, norms and intentions form a basis for the communicative acts of issuing and changing documents. However, the description of such a diagram is outside the scope of this paper.

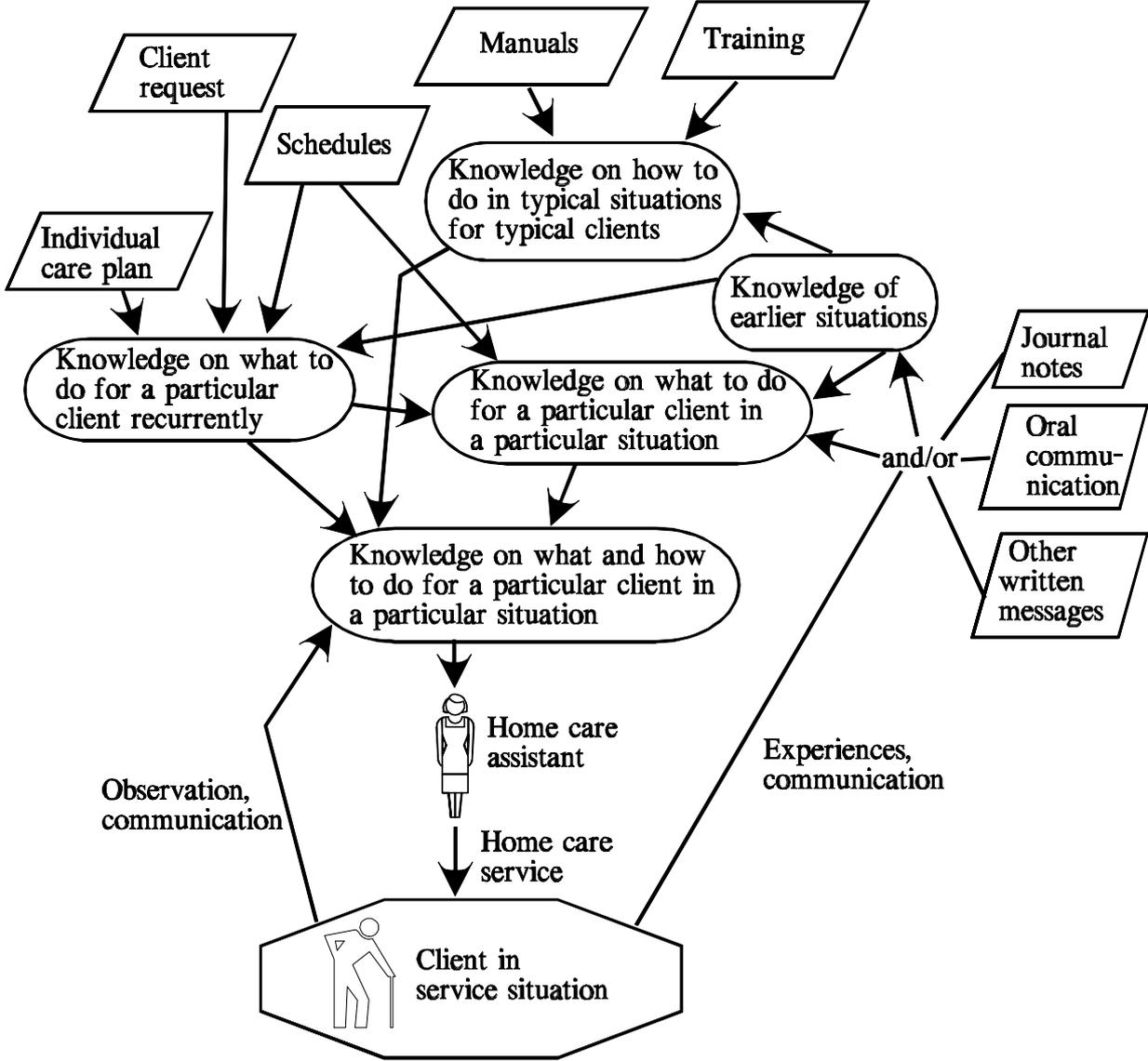


Figure 2 A knowledge diagram describing different knowledge types, their relations and bases and links to organisational action in a home care service context

The knowledge diagram has been an important aid to relate different knowledge types to the goals of the home care unit. Especially the individualisation of home care services can easily be traced in the knowledge diagram. It shows that it is not enough to have general knowledge

about home care. To perform individualised services it is necessary with instancial knowledge; i.e. knowledge about particular clients in particular situations. It is, thus, necessary to establish organisational structures and means (e.g. communication patterns) to ensure that home care assistants have such knowledge which enables well adapted service actions.

The knowledge diagram has served the function of designing IT-based knowledge management aids. Improvements in knowledge utilisation and knowledge transfer must be made in the home care unit. A redesign of documents plays an important role here. New IT-based media have been developed using participatory design approach by the aid of iterative and interactive prototyping. The design work have be performed in ways sensitive to the service care culture involving much tacit knowledge. At the moment the proposed new IT are being tested among the personnel. The experiences so far are very promising.

5. Conclusions: contextualisation of knowledge

In this paper we have argued for a pragmatic and contextualised understanding of knowledge in organisations. Knowledge should not be seen in isolation. Knowledge has always relations to actions. This contextualised understanding also encompasses a process view on knowledge: Knowledge is created, transferred and utilised. How is knowledge created? We learn from interacting with the social, artificial and natural environments. To be more specific, we learn from reading documents, listening to oral communication and other kinds of observation. In addition we learn through action reflexivity; i.e. when acting we experience our own actions and the consequences of our actions (Giddens, 1984). We also learn through reflection on our interpretations and pre-knowledge.

Knowledge is utilised for action and in action. An actor uses knowledge (both situational and transsituational) when identifying an action situation and deliberating her possible actions in this situation. When acting an actor uses her knowledge and other skills to perform a competent action. The action results bear more or less eligible traces of the knowledge used. In communicative actions, the action results in terms of oral utterances or written messages are explicit concerning its knowledge through the use of a shared language. Through such communication processes it is thus possible to transfer knowledge. One must however always remember that there can be a mismatch between the intended knowledge of the speaker and the interpreted knowledge of the recipient.

We have in this paper presented an approach for contextual knowledge analysis and also illustrated its use in an action research project within home care services. Theoretical background for our approach has earlier been presented in Goldkuhl & Braf (2000), Nilsson (2000) and Goldkuhl et al (2001). We claim that contextual knowledge analysis is important when developing KM oriented information systems (IS). We claim also that this kind of approach is crucial when developing other types of information systems – not necessarily labelled as KM systems – since all IS involve communication of knowledge between people. Contextual knowledge analysis is important not only for KM and other types of IS development endeavours. We claim that it is also important when working with other kinds of changes and developments of organisations. This is because knowledge is always an integral part of organisations. There can be no fruitful development of processes, routines, models, etc without paying explicit regard to development and use of individual and organisational knowledge.

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