

# Right Questions to Capture Knowledge

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**Abstract.** Existing tools that are used to support the process of transferring tacit knowledge into explicit knowledge do not support the affection of individuals and their knowledge, but rather data and information processing. A more personalised view of knowledge is required, and a toolbox has been constructed in order to increase the individual's capacity to describe his/her own situation within organisations. This is assumed to motivate the person to contribute with knowledge. An empirical investigation of a prototypical nature has been conducted. The empirical results are positive for eliciting knowledge.

**Keywords:** Knowledge Management, Knowledge Transfer, Motivation, Holism, Knowledge Reuse.

## 1. Introduction

It is argued that our society is highly focused on immaterial concepts such as ideas, information, and human relations (Castells 2000; Kelly 1998; Lyttkens 2001). This focus puts Knowledge Management (KM) into a totally new position within an organisation. A common statement is that knowledge is looked upon as the most important resource. Organisations are aware of the competitive advantage in transforming individuals' tacit knowledge into well-structured explicit knowledge to be reused. Different technological tools, like applications based on advanced databases, the Internet, groupware technologies, are developed to support this transmission process. In general, knowledge is extracted from the person who developed it, thereafter made independent of that person, and reused for various purposes (Hansen et al. 1999). The primary purpose is to transform tacit knowledge into storable explicit knowledge.

However, it is difficult to capture knowledge as symbolic descriptions (Garavelli et al. 2002), and many of the solutions support a rather static or technological view. There is a dominating IS/IT perspective with an overemphasis on explicit knowledge (Stenmark 2001). Existing tools do not stimulate individual affection in order to generate knowledge, but rather data and information processing. When knowledge systems are built, it often seems that we forget that we cannot extract this from individuals without their participation, motivation, or awareness of their knowledge. There is a neglect of a personal dimension.

Traditionally, Western philosophers have generally agreed that knowledge is "justified true belief" (Nonaka & Takeuchi 1995). It emphasises the absolute, static, and nonhuman nature of knowledge and is typically

expressed in prepositional forms in formal logic (Nonaka 1994). On the other hand, it has been commonplace in philosophy in recent years to challenge assumptions that knowledge is a timeless phenomenon and to suggest instead that truth is a story that is actively and creatively constructed (Blackler et al. 1998). A more pluralistic view assumes that there are different forms or types of knowledge. Nowadays, the focus of the discussion is varied; knowledge can, for example, be embodied, embrained, encoded, embedded, and or encultured (Blackler 1995).

If a more personalised view of knowledge is applied, it can be transferred in brainstorming sessions and "one-to-one" conversations (Hansen et al. 1999). Boland and Tenkasi (1995) argue for the importance of being able to create strong perspectives within a community, as well as the ability to take other perspectives into account. Our knowledge increases (about ourselves as well as others), if our perspectives are continually questioned and if we try to interpret what others want to mediate to us. We must (1) allow individuals to describe and analyse their experiences, as well as (2) letting them take other perspectives into account in order to rewrite other people's ideas and arguments. This is the same as the capacity of understanding and formulating a situation from another individual's point of view (Dixon 1998).

## 2. Making individuals aware of what they and others know

Nonaka (1994) and Nonaka and Takeuchi (1995) argue that the process of knowledge conversion (the dynamic interrelationship between tacit and explicit knowledge) lies at the heart of knowledge creation. Thus they have, with Polanyi's (1966) distinction between tacit and explicit knowledge as a foundation,

constructed a two-by-two table with four modes of knowledge creation: *socialisation* (from tacit knowledge to tacit knowledge), *externalisation* (from tacit knowledge to explicit knowledge), *internalisation* (from explicit knowledge to tacit knowledge), and *combination* (from explicit knowledge to explicit knowledge).

Socialisation is a process where tacit knowledge can be attained without language. A person can learn by observation, imitation, and practice, as the key to acquiring tacit knowledge is experience.

In combination, different types of explicit knowledge are combined. Face-to-face communication is not required to share this type of knowledge, but telephone or e-mail may be used.

Externalisation converts tacit knowledge into explicit knowledge. For example, metaphors and analogies play an important role in articulating tacit knowledge that is difficult to express in language.

Internalisation converts explicit knowledge into tacit knowledge. The process requires action to be deeply rooted in it, where learning is a way of assimilating the knowledge.

The interactive process between externalisation and internalisation constitutes the two important elements in knowledge creation.

The narrating of experience is very important but often overlooked in relation to knowledge production in knowledge intensive organisations (Boland & Tenkasi 1995). Some authors who examine the issue of externalisation of knowledge and concentrate on the processes through which people develop shared conceptions of their activities are for example: Orr (1990), Early (1982), Schön (1979), and Searle (1969). Orr has described different characteristics and the importance of stories in his study of photocopier repair technicians: (1) the idea of using stories is to make sense of ambiguous situations, (2) details are important, and (3) telling is as situated as recounting the context in which the incident occurred.

Early used narratives to set illness in its context and she found the logic in the narratives to be proximate and specific. She stressed multiple medical resources, and that detailing, which provide specific contexts, is an important issue. Schön discussed metaphors from two different perspectives: (1) as anomalies of language which need explaining or explaining away, or (2) as central to the task of accounting for our perspectives on the

world, which brings to the centre how we think about things, make sense of reality, and sets the problems we later try to resolve. Searle has discussed externalisation from a language/action perspective. His hypothesis is that use of linguistic elements is governed by certain rules and places a heavily reliance in the intuitions of the speaker.

When we narrate our experience, we also construct and validate the self (Boland & Tenkasi 1995). By interacting with others in dialogues, we are aided in formulating thoughts and tacit skills, as well as forced (or having the opportunity) to structure our thoughts and mental models and express them in an understandable way (in words and/or in images) for others. In the externalisation-internalisation situation, we learn (1) when we talk (when we express ourselves and/or explain something), (2) when we listen to others, and (3) when we give feedback to others, or receive it.

One problem concerning tacit knowledge is that the individual is not fully aware of what he/she knows. The Greek philosopher Socrates, who developed a specific technique for dialogues, addressed this issue. A well-known example is when Socrates is leading the uneducated slave Meno to a solution of an advanced mathematical problem. By inductive and deductive questions, Socrates deduces the right answers (Perris et al. 1988). By using the information a person already has, adequately formulated questions can support him/her in articulating and structuring the knowledge. This leads to an increased awareness of the person's knowledge and his/her relation to the world around (Boland & Tenkasi 1995).

The "resistance" an individual meets in dialogue is of great importance. As in cognitive psychotherapy, it is here assumed that the right questions will help individuals to relieve their knowledge (Perris 1989). In general, questions should promote individual awareness and mutual comprehension and not lock the individual, not mislead, or give him or her incorrect associations. Some examples are: What do you mean by...? How do you know that...? Could you give me an example? Do you know how others see it?

Cognitive psychotherapy is a learning process in which the goal is for the individual to receive new knowledge about him/her self (ibid). It is an active, directive, and humanistic process characterised by *collaborative empiricism*, where two individuals cooperate in an investigating way. They collect facts and present hypotheses, to thereafter analyse their

acceptability, whether they should remain or be rejected and replaced. Our knowledge increases when others question us, and also when we try to interpret what others have said to us.

### 3. Motivating people to share knowledge

Individual development of employees is necessary if the whole organisation is to develop. Perris's (1989) explanation of knowledge growth will serve as an explanation of individual development: "Knowledge growth means the process which leads to a reach beyond the current state of clarity, competence and comprehension, or, in other words, that a cognitive/emotional restructuring of view based upon him/her self, upon others and reality takes place" (p. 2112, authors own translation). It is after all, the individual's motivation, engagement, and ability to communicate knowledge and experiences to others that underlies the possibility for the organisation to learn.

McDermott (1999) has reported, (as also referred to in Garavelli et al. 2002), that in almost all successful cases of KM, the key factor is the *human role* in the interpretation process (and, as mentioned before, motivation and engagement plays a significant part here). Senge (1995) quotes Kazuo Inamori (the founder of Kyocera, world leader in advanced ceramic technology in electronic components, medical material, and office and communication equipment):

"Either it is about research and development, company management, or some other side of the working life humans are the driving force. And humans have their own will and their own way to think. If not the co-workers are motivated by them selves to fight for growth and development ... it will not be any growth, no increased productivity, and no technical development."

(p. 135, authors own translation)

Motivation is often defined by an individual's needs, goals, and motives (Mabon 1992). Maslow's hierarchy of needs (widely known in the psychological motivational area), addresses the following steps: (1) physiological needs, (2) safety and security, (3) solidarity, (4) the striving for appreciation, and (5) to realise self. The lower level must be fairly satisfied before the next can be taken upon.

Many individuals within organisations have problems with an awareness of their value or their own capacity to work. Employees are often not aware of their goals in the workplace, explicit goals in personal life, comprehensive business goals, or their role in the larger whole. This results in a difficulty to understand the effect of their own actions, which makes it problematic for them to contribute to learning and to effectively make use of their motivation. Traditional organisations are constructed to support only the first three levels in Maslow's hierarchy, that is to say, food, accommodation, and belonging (Senge 1995). How can this favour personal development, cooperation, and shared visions?

Incoherencies and contradictions that feature within organisations are often obscured (Blackler 1995). This may be due to a conventional imagery of organisations, which liken it to a rational machine, in which individuals learn to work within the situation in which they find themselves. Engeström (1987) models, in his 'General Model of Activity Systems' an holistic approach, relationships that exist between; (1) the *individual*, (2) the *community* in which the individual is a part, (3) the *conception(s)* the individuals have of their joint activities with colleagues in the community, (4) *instruments or concepts* in the organisation, (5) *division of labour*, and (6) *social rules*. Factors (1), (2), and (3) provide the basis for the model, depicted as a triangle, and factors (4), (5), and (6) impose relations between them. Engeström is striving to not separate the individual from the collective, or the social from the technical (Blackler 1995), but acknowledges incoherencies, paradoxes, and conflicts as potential driving forces for change. Not only individuals or the organisations should be the unit for analysis, but the whole socially-distributed activity system.

It is not easy to find a way of representing the suggestions that knowledge is provisional, mediated, situated, contested, and emotional in a straightforward way (Blackler et al. 1998), but Engeström captures many of the points summarised above in his general model of activity systems.

### 4. Aim and method

A toolbox has been constructed, in order to increase the capacity of the individuals to describe and be aware of their own situation in a structured way. An empirical investigation of a prototypical nature has been conducted. The method has similarities with Yin's (1994) description of case studies and explanation

building, when analysing the data. The important characteristic for explanation building is that the final explanation is a result of a series of iterations.

Yin describes the case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (ibid). Yin suggests that a case study can be exploratory, descriptive, or explanatory. The author subscribes in general to an exploratory case study, thus investigating if the toolbox can be applied for acquiring and representing knowledge for it to be reused in organisations.

Sources of evidence have principally been upon *focused open-ended interviews* with employees in two different knowledge-intensive organisations – a medical clinic and a University department, both with a population of approximately 20 individuals. 17 interviews have been conducted in total. The interviews resulted in questions to be used in the toolbox and methodological construction. Four seminars were needed to create empirical data, which primarily resulted in methodological reconstruction.

Each interview started with questions worked up from theory and earlier practices. After each interview, the questions were evaluated in consultation with the respondent according to pre-defined evaluation criteria. It was important that the questions should teach the individual something about him/her self. It was also important that some of the answers were suited for being stored in a knowledge representation system. Thereafter, the questions were redesigned, and the procedure reinitiated. The goal with the toolbox is that it should be a dynamic tool that does not contribute to a quiescent organisation (like several models or methods often do in their conclusion), but forces individuals to continually rethink their actions, their implicit assumptions, their relations to other individuals, and to their environment.

## 5. Field results

In the initial state, ideas were derived and questions were formed. They were, in general, taken from Senge (1995) and from his descriptions of learning organisations. Senge is describing three learning disciplines – *systems thinking, personal mastery, and mental models*. When we think systematically, we are using system archetypes (more developed structures that we continually come

across in life). It is shown, for example, that there are rather simple patterns behind complicated management issues (ibid)). Most important is to strive for individual coherency and connection. Personal mastery is to explain one's personal visions, to retain creative tensions, to have a focus on both the vision and real life and that this tension between vision and real life generates energy with which to realise the vision. When we are working with our mental models (previous conceptions that keep accustomed thoughts and behaviours), we need to separate real facts derived from ones own experiences and generalisations created from them. Openness and truth are two important factors.

The questions to the respondents treated issues like; the employees most important assignment at work, how to carry out this assignment, problems, formal and informal activities for sharing knowledge in the organisation, private and work-related goals and visions, if it was possible to relate the private goals and visions with the work-related ones, perceived ability to be aware of ones value and part in the organisation, etc. The respondents were also asked if they were positive or negative to sharing their answers with others in the organisation, for example to publish them on their Intranet. Their opinions to this were rather divergent. However, to make organisations internal valuable knowledge explicit in a structured and available way increases its competitive advantages (Dixon 1998). This makes it extremely important to investigate how it might be collected, treated, and stored.

One standpoint has consistently permeated the survey, for knowledge to be shared motivation, will, and comprehension of the motive for sharing knowledge must exist. When some of the interviews had been carried out, it was perceived that the respondents were not so engaged as they were hoped to be. During one interview the respondent was asked to talk about any central reference in his life – authors, books, inspiring person(s), etc., something central in this individual's thoughts that affects and permeates his actions and behaviour. This process discovered that the respondent was not explicitly aware of this central source or its effect, and unexpectedly a totally new discussion arose, beneficial for both respondent and interviewer.

However, to get an appreciation of an individual's central references may be difficult. It was later shown, for example, that if the interview (with the structure that eventually developed) opened with too specific a

question, too far away from the individual's field of specialisation, the respondent's focus was misguided from the start and had difficulties later discussing his/her central references.

Results from the interviews and seminars demonstrated, a remarkable difficulty for individuals to consciously comprehend what they really know or how they carry out an assignment. It was observed to be of great significance that the interviewer persistently repeats, verifies, and concretises the respondents' descriptions. What is more, it may be of assistance for the respondent to compare his/her own method with others.

Further summarising remarks can be drawn upon following methodological analysis:

- If an interviewer is (too) familiar with the area under examination and documents specific descriptions from a respondent, there is a risk that specific descriptions documented from a respondent may not be sufficiently general and accessible to others. In the opposite scenario, there is a risk that an interviewer not familiar with the area may document specific descriptions lacking specificity, commonly referred to as contextualising (circumstances relevant to an event or fact).
- There was a more favourable response from the respondent to questions if he/she perceived some form of control over them. For example, instead of a specific question like, 'What do you think about this...?', it was preferable to ask, 'Is it possible to answer if...?', this incised confidence and relaxation.
- Within organisations there is a continual change of subjects of matter with time. There must be some procedure to assimilate these questions for continual discussion for the organisation to mature.

### 5.1 Management aspects

Conventionally, the management must be a part in the efforts for becoming a learning organisation (or for the organisation to change at all). Several authors claim that there is a need for individuals with formal responsibility according to KM, that is to say, knowledge managers. Rogers and Agarwala-Rogers (1976) describe the function of a Liaison, an individual who integrates and interconnects

parts within an organisation. Kreps (1990) discusses that in order to develop proactive organisations, organisation members must be trained to establish effective communication relationships with knowledgeable individuals in the organisation. A knowledge manager is necessary for the organisation to be assured of continual progression. He/she must do things like open opportunities for individuals to interact with each other and thus to benefit knowledge exchange in a dynamic manner. This person could further take part in meetings and overhear current topics. The author assumes that questions, which force individuals to continually reflect on their behaviour, are extremely important. These should be learned about in order to confront them. However, every organisation has its own culture, issues, and values, which makes it important to study them in their context as well.

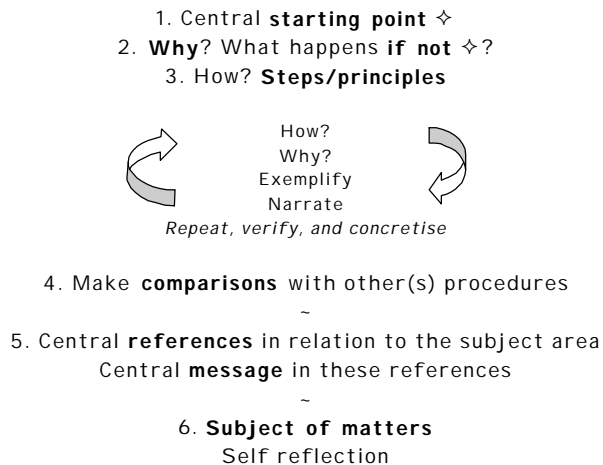
### 6. Proposed solution

The toolbox was continuously reevaluated according to the following three criteria:

1. It should be easy to use and understand.
2. The procedure for using the toolbox should not be time-consuming.
3. It should be possible to store some of the answers in a knowledge representation system in order to make them available to others.

A visual description is presented below (fig. 1). Two major streams may be recognised in the toolbox; one knowledge generating part (1-4), and one part for developing the individual (3-6).

The procedure begins with a *central starting point*, for example with the question, 'what is the most important assignment to you in your working life?'. The opening phase should be general enough to not mislead the individual in an incorrect direction, and specific enough to attract attention for him/her. Thereafter, to verify that the topic is of significance and worthy to handle, one should question what happens *if not*.



**Figure. 1** Approach for Increasing the Individuals Capacity to Describe His or Her Situation in a Structured Way

As a third phase, the issue will be dealt with in an iterative manner in different *steps* and/or *principles*. In general, the interviewer continuously repeats, verifies, and concretises the respondent's description by asking how and why, and requesting him/her to exemplify and narrate the issue. Ambrosini and Bowman (2001) have developed a similar method – a mapping process, based on cognitive and causal maps, semi-structured interviews, and metaphors. The mapping process (with focus on a special issue) raises questions like; 'What causes A to happen?', 'How does A happen?', 'Could you tell me an example about B?', and 'Could you narrate a story about the occurrence of C?' Since tacit knowledge has a cognitive dimension, is practical, context specific, and difficult to formalise (ibid), this approach will help individuals articulate the tacit and often taken for granted knowledge.

The following example illustrates the procedure described above: A respondent was asked to explain how she proceeded in a particular matter, and from the beginning she found it somewhat ridiculous to discuss the issue (she thought this was widely known in the organisation). However, during the session a structure started to evolve, and finally when she saw her story in a formalised representation, she understood its value for others.

Fourthly, *reflection and comparisons* with others behaviour or procedures will take place. The technique of Repertory grids has been used (Kelly, 1963). These consist of a chart in which "elements", usually placed in columns, are rated by adjectival phrases or simple adjectives known as "constructs" set in rows.

For example, to the constructs 'trust' and 'honesty', a nurse may have the following directional relationships: "nurse to patient", "patient to nurse", "nurse to colleagues", "colleagues to nurse", etc.

An individual's *central references*, as already discussed in Chapter 5 (Field results), will be sought next. One could, for example, ask if there is someone the respondent is inspired or influenced by in a particular matter. This gives an opportunity to start to unwind some of his/her underlying assumptions. The psychoanalyst Erich Fromm used a similar technique in his studies of the German working class. His classical question: 'Name three people, living or dead, that you admire the most, and why?', has been used to interpret the ideal and characteristics the respondent values and aspires to in order to characterise him/her self (Rendahl 1992). It is important to get an appreciation of the individual's unique knowledge and skills to strengthen him/her and let the organisation benefit from it.

At this point in the empirical tests, when steps 1-5 had been conducted, it was observed that the discussion of other issues and extraction of knowledge (steps 1-4) from the respondent became increasingly unhindered. The interviewer had attained an appreciation of the respondent, and he/she in turn received assistance in revealing underlying assumptions or mental models related to the knowledge to be elicited. This helped a number of individuals to further relate their behaviour to other actions.

In the final stage, individuals' specific *subjects of matter* will be given attention, that is to say, those thoughts which occupy their minds. This is in order to reveal his/her thoughts on colleagues' dilemmas and concluding resolutions from such thoughts.

## 7. Summary and concluding remarks

- The empirical evidence in the survey shows that the toolbox is well suited for being used for eliciting knowledge.
- Even if the process of eliciting knowledge, as described in the model in Chapter 6, is not too extensive, both reusable formal knowledge representations and personal involvement are achieved.
- In total, the whole procedure (steps 1-6) might only take about 15 to 20 minutes to go through.

In conclusion, the model described supports both an individual and a collective endeavour for knowledge within organisations, and Engeström's (1987) General Model of Activity Systems is requested upon for illustrating this. It supports a view of knowledge as culturally situated, technologically mediated, and socially distributed. Individuals must be allowed to describe and analyse their experiences, as well as to take others' perspectives into account (and adequately formulated questions, in a given structure, are believed to support the individual in articulating and structuring his/her knowledge). This procedure must be carried out proactively and deliberately within the organisation, and, as shown above, can be conducted in a relatively straightforward way.

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