Knowledge Communication Problems between Experts and Decision Makers: an Overview and Classification

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Abstract: In this article we examine the difficulties of knowledge communication among experts and decision makers. We begin by outlining where and how the communication of expertise from specialists to managers is crucial. We then review theoretical constructs that highlight knowledge transfer problems among experts and decision makers. On the basis of this review and using the results from six focus groups and thirty interviews with engineers and managers, we categorise these transfer challenges into five major groups. We distinguish among expert- and manager-caused problems, reciprocal problems, problems due to the interaction situation and problems caused by the organisational context. These categories can be used to guide research on the micro-aspects of knowledge transfer. Managers can use these problem categories to identify and reduce knowledge transfer barriers in their interaction with specialists.

Keywords: Knowledge transfer, knowledge communication, expert, decision making, knowledge media, knowledge dialogues

1. Introduction: The importance of knowledge communication in management

Communicating professional knowledge is a key activity for today's specialised workforce. The efficient and effective transfer of experiences, insights, and know-how among different experts and decision makers is a prerequisite for high-quality decision-making and coordinated, organisational action (Straub and Karahanna, 1998). Situations of such deliberate (interfunctional) knowledge transfer through interpersonal communication or group conversations (Gratton and Goshal, 2002) can be found in many business constellations, as the following typical examples illustrate: Technology experts present their evaluation of a new technology to management in order to jointly devise a new production strategy (McDermott, 1999). Engineers who have discovered how to master a difficult manufacturing process need to convey their methods to engineers in other business units (Szulanski, 1996, 1999). Legal experts brief a management team on the implications of new regulations on their business model (Wilmotte and Morgan, 1984). Experts from various domains need to share their views and insights regarding a common goal in order to agree on a common rating of risks, requirements (Browne and Ramesh, 2002), industries or clients. Project leaders need to present their results to the upper management and share their experiences of past projects in order to assess the potential of new project candidates (Schindler and Eppler, 2003). Scientists who work as drug developers present new avenues for future products that business unit managers must assess. Market researchers present their statistical analyses of recent consumer surveys to the head of marketing (Boland et al., 2001). Strategy consultants present the findings of their strategic company assessment to the board of directors in order to devise adequate measures (Creplet et al., 2001). What these diverse situations all have in common is the problem of knowledge asymmetry (Sharma, 1997) that has to be resolved through interpersonal communication. While the manager typically has the authority to make strategic or tactical decisions, he or she often lacks the specialised expertise required to make an informed decision on a complex issue (Watson, 2004). Because of the wide scope of decisions that need to be made, a manager frequently has to delegate the decision preparation to experts who – based on their professional training and previous experience – can analyse complex situations or technological options in a more reliable manner. The results of such analyses then need to be communicated back to the manager, often under considerable time constraints. The knowledge communication challenge (Hagglund et al. 1992), however, begins long before that, at the time when the manager has to convey his or her knowledge needs and decision constraints to the experts in order to delegate the analysis task effectively.

2. Background: The concept of knowledge communication

Based on the reasoning described in the previous section, one can view knowledge communication as the (deliberate) activity of interactively conveying and co-constructing insights, assessments, experiences, or skills through verbal and non-verbal means. Knowledge communication has taken place when an insight, experience or skill has been successfully reconstructed by an individual because of the communicative actions of another. Knowledge communication thus designates the successful transfer of know-how (e.g., how to accomplish a task), know-why (e.g., the cause-effect relationships of a complex phenomenon), know-what (e.g., the results of a test), and know-who (e.g., the experiences with others) through face-to-face (co-

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located) or media-based (virtual) interactions. This type of knowledge communication can take place synchronously or asynchronously[1]. The first mode of communication refers to (often face to face) real-time interactions, while the latter designates delayed (usually media-based) interactions. We use the term knowledge dialogues for the first type of (synchronous) knowledge communication, stressing the interactive and collaborative style of knowledge exchange in this communication mode (see Isaacs, 1997, Nonaka et al., 2000). Depending on the knowledge-focused goal of such dialogues, we distinguish among Crealogues (that focus on in the creation of new insights), Sharealogues (facilitating knowledge transfer), Assessalogues (focusing on the evaluation of new insights) and Doalogues (e.g., turning understanding into committed action, i.e., 'talk the walk'). Each type of knowledge dialogue requires different behaviour and interaction patterns and support measures (e.g., whereas Assessalogues require critical, convergent evaluation tools, Crealogues require an open atmosphere for divergent thinking and rapid idea generation without judgment).

With regard to asynchronous knowledge communication, we refer to the concept of knowledge media (see Eppler et al., 1999) that enable knowledge transfer through technology-based communication, collaboration, e-learning, aggregation, retrieval and archiving services. Knowledge media can be differentiated in terms of their target community, e.g., scientific knowledge media, public knowledge media, professional knowledge media, etc. The concept of knowledge media in general stresses the importance of a community that collaborates regularly using a common platform that consists not only of IT-functionalities, but also of common communication norms and (usage) rules. In this understanding, knowledge communication is more than communicating information (e.g., facts, figures, events, situations, developments, etc.) or emotions (e.g., fears, hopes, reservations, commitment) because it requires conveying context, background, and basic assumptions. It requires the communication of personal insights and experiences. Communicating insights requires the elicitation of one's rationale and reasoning (i.e., one's argumentation structure), of one's perspective, ratings and priorities, and of one's hunches and intuition. At times it may even be necessary to present an overview of the expert's relevant skills along with his/her previous professional experiences and credentials (Lunce et al., 1993) in order to build trust and enable an adequate atmosphere for effective knowledge transfer. Thus, in addition to pure information (and at times emotion), a myriad of other indicators need to be provided in order to transfer knowledge. These indicators help the person who requires insights from another to understand the other's perspective, to re-construct the other's insights correctly, and to connect them to one's own prior knowledge. Still, knowledge communication does not only differ in terms of what is communicated (knowledge in context rather than isolated data or information[2]), but also how one communicates. The transfer of information can often be successful without additional effort beyond an ordinary, every day communication style. Communicating expertise-based, complex insights, by contrast, calls for didactic tricks and at times sophisticated indirect speech acts and visualisation means that help the other side to become actively involved in the communication and engage in a collaborative, goal-directed sense making process – a prerequisite for the construction of new knowledge (see Weick, 1995). The process of knowledge communication hence requires more reciprocal interaction between decision makers and experts because both sides only have a fragmented understanding of an issue and consequently can only gain a complete comprehension by iteratively aligning their mental models. All of this means that when we communicate knowledge, we are still communicating information and emotions, but we also create a specific type of context so that this information can be used to re-construct insights, create new perspectives, or acquire new skills.

This (interpersonal) communication perspective on knowledge transfer has already been emphasised by other researchers – who explicitly label this view as 'knowledge communication' – (Scarbrough, 1995, p. 997; Antonelli, 2000; Harada, 2003; Reiserer et al., 2002) and by several practitioners (e.g., Watson, 2004). Nevertheless, these authors have often treated knowledge communication as a kind of black box that is described only in broad terms and general traits, such as the major communication goals or steps. By examining the communication problems, which often impede knowledge transfer in detail, we can look into this black box and propose pragmatic ways of improving knowledge communication, especially among experts and managers where the chasm between in-depth knowledge and decision authority is particularly apparent.

[1] Both modes can be used in one-to-one or one-to-many contexts. Both modes can rely on speech, text, graphics, and other means of communication (i.e., verbal and non-verbal).

[2] Our distinction between data, information, and knowledge follows the main stream conception found in current literature (see for example Davenport and Prusak, 1998). We view data as isolated recordings that are often generated automatically and cannot be directly used to answer questions. Information is connected, condensed or generally processed data that allows an individual to answer questions. Knowledge is what enables an individual to ask relevant questions (Newman and Newman, 1985, p. 499). It refers to the capability of an individual to solve problems (Probst et al., 1999). Information only becomes knowledge, if a person interprets that information correctly, connects that piece of information with his or her prior knowledge, and can apply it to problems or decisions (see also Alavi and Leidner, 2001)

3. Problems in communicating knowledge among experts and decision makers

In order to better understand the problems that can impede the effective transfer of decision-relevant knowledge from experts to managers and from managers to experts, we will review relevant constructs and prior findings from social and engineering sciences, as there are in fact numerous concepts that describe issues related to sub-optimal knowledge transfer. These concepts regard topics such as interdepartmental knowledge transfer, professional communication, decision-making, communication technology, or the nature of expert knowledge. By screening these disciplines and topic areas, we can establish a first overview of possible knowledge communication problems and we can create a systematic terminology to speak more explicitly (and consistently) about knowledge communication barriers. Previously identified barriers of knowledge communication are summarised in tables 1 through 3 (focusing on problems that primarily affect for decision makers, those that are key challenges for experts, and those that are relevant for both roles). There are three main criteria for including concepts in this table: first, the concept has to be closely related to problems of interpersonal, professional knowledge transfer[3]. Second, the concept has to describe a problem of major impact on the quality of knowledge transfer (rare or very specific issues are not included). Third, the concept has to be influential, i.e., it has to be cited with the same construct label by several authors (other than the creator of the concept). The resulting list in Table 1 first includes 'umbrella' concepts that designate a group of closely related problems, such as cognitive biases, decision making problems, argumentation fallacies, communication biases, or defensive routines, and then concepts that label individual problems, such as the not-invented here syndrome or the ASK problem. The 'Impact on' column designates whether the particular concept is mostly a weakness of decision makers or of experts, or for both professional groups.

Table 1: Knowledge communication problems of decision makers

Key Concept / Knowledge Communication Barrier	Description	References
Decision problems such as plunging in, shooting from the hip, poor feedback, taking shortcuts, frame blindness etc.	The decision maker may for example believe that he/she can make a complex decision right away without looking further at the provided analysis.	Russo and Shoemaker, 1989
Defensive routines (skilled incompetence, learned helplessness, easing-in, etc.)	New knowledge is sometimes not accepted (or provided) due to mechanisms or habits that prevent the identification and acceptance of one's own ignorance. This may lead to a reduced effort to understand complex issues (learned helplessness).	Argyris, 1986, 1990
Knowledge disavowal	A number of factors have been found which limit information use in organisations, such as not spending enough time collecting advice, refusal to share, fear of exposure, etc. Knowledge disavowal occurs when reliable and relevant information is not shared among decision makers.	Zaltman, 1983; Deshpande and Kohli, 1989
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Micropolitics of knowledge	The 'knowledge claims' of an expert are discredited by the decision makers due to their differing (hidden) agenda, because of a coalition of people with an alternative view, or due to the expert's lack of formal authority.	Lazega, 1992
Internal knowledge stickiness	Knowledge can sometimes not be transferred because of arduous relationships or casual ambiguities regarding the knowledge or because of the lack of absorptive capacity of the knowledge receivers.	Szulanski, 1996, 1999
Groupthink	A (management) team may not truly listen to the input of an expert because of the team's group coherence and group dynamics sometimes block outside advice and feel omniscient.	Janis, 1982
Information overload	An individual is sometimes not able to integrate new	O'Reilly, 1980,

[3] The concept does not have to originate in the context of interpersonal communication research, but its application to it must be obvious and fruitful, as in the example of the ASK problem. The ASK problem was first discussed in the information retrieval community, but it has ramifications for interpersonal knowledge communication as well.

Key Concept / Knowledge Communication Barrier	Description	References
	information into the decision making process because too much complex information has to be interpreted too quickly.	Eppler and Mengis, 2004
Self/Other effect	Individuals tend to discount advice and favour their own opinion.	Yaniv and Kleinberger, 2000
Knowing-Doing gap / Smart talk trap	Sometimes organisations know where a problem resides and how to tackle it, but do not move from knowledge to action (due to unhealthy internal competition or lacking follow-up).	Pfeffer and Sutton, 2000
Absorptive capacity	Limited ability of decision makers to grasp the knowledge of the expert based on lack of prior knowledge.	Bower and Hilgard, 1981
Ingroup outgroup behaviour	We tend to interact more with likewise groups than with others thus reducing our changes to acquire radically new knowledge.	Blau, 1977
Task closure	In our communication, we may choose to use a one-way communication medium because it permits us to close an open task without having to have a conversation. Thus leaner communication channels are used than may be necessary. In other words: We tend to want to close a communication process in order to complete an open task.	Straub and Karahanna, 1998; Meyer, 1962
ASK problem	Anomalous State of Knowledge: when a decision maker does not have the knowledge base to really know what to ask for. People need to know quite a bit about a topic to be able to ask or search for relevant information.	Belkin, 1980 ; Chen et al., 1992
Not-Invented here syndrome	Knowledge from others is sometimes rejected because it originated elsewhere.	Katz and Allen, 1982
Preference for outsiders	This is the opposite of the NIH syndrome and describes the tendency of managers to value outside knowledge higher than internal knowledge because it has a higher status, it is scarcer (because of difficult access) and because it is less scrutinised for errors than internal knowledge.	Menon and Pfeffer, 2003
False consensus effect	We assume others see situations as we do, and fail to revise our framing.	Manzoni and Barsoux, 2002
Inert knowledge	The knowledge that the decision maker has acquired from the expert does not come to mind when it is needed or useful for decision making or actions. The transferred knowledge is stuck in the situation where it has been acquired.	Whitehead, 1929
Hidden profile problem	One often doesn't know other people's background (profile), i.e., what they know and could contribute to a problem's solution. The knowledge that is thus frequently shared in a discussion is what is expected by everyone.	Stasser 1992; Stasser and Stewart, 1992
Cassandra syndrome	The decision makers do not give sufficient weight or attention to an expert's warning because they face many other important problems. Only when the situation has deteriorated dramatically do they start taking the expert's advice.	Mikalachki, 1983
Mutism	Because of an inadequate understanding of the role and capabilities of an expert, the decision maker does not articulate his suggestions, but remains quiet when asked about his expectations or needs.	Cantoni and Piccini, 2004

Table 2: Knowledge communication problems of experts

Key Concept / Knowledge Communication Barrier	Description	References
Knowledge sharing hostility	Knowledge communication fails because the 'knowledge giver's are reluctant to share their insights due to micropolitics, strenuous relationships, or due to	Husted and Michailova, 2002

Key Concept / Knowledge Communication Barrier	Description	References
	fear.	
Paradox of expertise / Curse of Knowledge	Experts sometimes find it difficult to articulate their knowledge or rephrase their insights in a way that non-experts can relate to. An insight seems to them self-evident whereas for others it is in fact difficult to grasp.	Hinds 1999; Johnson, 1983
Expert inconsistency	Sometimes experts indicate other rules than they actually apply in their problem solving.	Johnson, 1983
Terminology Illusion	Experts tend to overestimate the notoriety of terms at the limits of every day language and specialised language. In consequence they overestimate the level of understanding of non-experts of what they communicate.	Rambow 2000
Projectionism	In the communication of his or her analysis results, the expert does not tailor his insights to the knowledge of the decision maker, as he assumes that the target group already has a similar understanding of an issue.	Cantoni and Piccini, 2004

Table 3: Knowledge communication problems for decision makers and experts

Key Concept / Knowledge Communication Barrier	Description	References
Cognitive biases (confirmation, availability, recency, dichotomised reasoning, framing, anchoring, representativeness, etc.)	Knowledge may not be correctly interpreted or used due to biases in one's reasoning, such as listening only to those insights that confirm one's prior opinion.	Tversky and Kahnemann, 1974
Communication biases (audience tuning, misattribution bias, saying-is-believing, shared reality)	The knowledge is inadvertently manipulated through communication itself: - Audience Tuning: Communicators spontaneously tune their messages to the personal characteristics of the audience or to situational factors – Misattribution Bias: Communicators tend to consider their audience-tuned messages to be about the topic of the message rather than about the audience - Saying-Is-Believing Effect: Auto-persuasion has stronger effects because one does not activate regular mechanisms of critical reflection. - Shared Reality: You consider your audience-tuned message to provide objective, accurate information on the message topic because it was shared with others.	Higgins, 1999
Argumentation fallacies (begging the question, overgeneralising, personal attacks, defective testimony, problematic premise, slippery slope, red herring, etc.)	In demonstrating one's ideas and insights, people fall into argumentative traps, such as begging the question (circular reasoning), over-generalising, appealing to false majorities or false expertise, reasoning ad consequentiam (what shouldn't be true, can't be true) or reacting with direct attacks at a person (at hominem) rather than at a knowledge claim.	Van Eemeren et al., 1992
Set-up to fail syndrome	Managers are projecting their initial expectation of an expert's likely performance unto him/her, leading to the self-fulfilling prophecy of (at times) lower performance. This is aggravated by de-motivating feedback to the expert.	Manzoni and Barsoux, 2002
Common knowledge effect	The tendency of a group to focus merely on commonly shared (rather than unique) pieces of information.	Gigone and Hastie, 1993
Lack of common ground	Common ground refers to the manager's and expert's assumptions about their shared background beliefs about the world. If those assumptions are wrong or inconsistent communication becomes more difficult.	Clark and Schaefer, 1989, Olson and Olson, 2000

The problems listed in the three tables are neither mutually exclusive nor collectively exhaustive. Nevertheless, the three tables summarise many of the key pitfalls in communicating knowledge. It is in the nature of the phenomenon that these problems are not isolated, but that they rather interact in many, sometimes unpredictable ways.

4. Empirical evidence

On the basis of this review of already documented key communication problems, we have gathered further empirical evidence. We have conducted six focus groups and ten personal interviews with engineers that frequently collaborate with managers in their companies, as well as interviews with 20 IT managers who regularly interact with experts for their decision making, we distinguish among five types of knowledge communication problems. These problem categories are briefly summarised below. Each focus group lasted for approximately one hour and consisted of eight to twenty participants. The focus groups were conducted in 2002 and 2003 in Switzerland and Germany with engineers and IT specialists from eight companies (each employing more than 1000 people). Focus group facilitation and documentation was provided by the research team. The topic of the focus group discussion was "communication problems among engineers/specialists and managers". Each interview lasted between 30 minutes to two hours. Interviewees were mostly senior IT managers or chief information officers of medium-sized and large Swiss companies, as well as select line managers with considerable experience. The main topic of the interviews was "problems in the knowledge communication with specialists." The following table lists the focus group details. The focus groups were all conducted prior to (in-house and public) seminars on professional communication. Participants were asked one main questions by the facilitator: what do they, in their experience, see as the major problems in the communication between managers and experts (and can they give specific examples or anecdotes of each problem). Based on this question, the facilitator lead an approximately half hour long discussion among the experts and collected the various problems that were mentioned.

Table 4: Focus group details

Group Number	Duration	Number of Participants	Date
Focus Group 1	40 minutes	17 (mostly telecom engineers)	6.12.02
Focus Group 2	40 minutes	19 (mostly IT specialists)	23.1.03
Focus Group 3	30 minutes	20 (mostly engineers)	24.3.03
Focus Group 4	40 minutes	18 (mostly IT experts)	25.4.03
Focus Group 5	40 minutes	13 (mostly automotive engineers)	24.5.03
Focus Group 7	30 minutes	8 (marketing analysts)	5.6.03
Focus Group 6	40 minutes	16 (mostly telecom and IT experts)	1.9.03

5. Classification of problems

Based on this empirical evidence and the review presented in section 3, we distinguish among five types of knowledge communication problems. These problem categories are briefly summarised below.

The first type of knowledge communication problems is expert-caused difficulties. These mistakes make it cumbersome for the decision maker to grasp the insights of a specialist. This type of problem also includes issues that make it difficult for the manager to explain his or her own constraints and priorities. Examples of this kind of problem are the use of overly technical jargon, not relating the insights to the manager's situation, starting with details before an overview is given or lacking interest of the expert in related (but relevant) issues. From the list provided in the above tables, knowledge-sharing hostility and the paradox of expertise clearly belong to this category. This group of problems can be illustrated with the following quotes from an international automobile manager and a financial information marketing executive:

> *"What frustrates me most in the collaboration with our experts is their disregard of context, of the big picture or of how others will use their results."*
>
> *"These people [experts] start with Adam and Eve in paradise and work their lengthy way up to the current business situation. That is tiresome, especially when you're used to a headline type of news."*

The second type of knowledge communication challenges is *manager-caused* problems that leave it unclear to the expert what the manager actually expects from him/her (briefing). This makes it difficult for the expert to convey what he or she knows. Management mistakes make it harder for the manager to fully profit from the offered expertise. A manager's reluctance to discuss detailed problems may have major effects on an issue, such as lack of concentration and attention or lack of technical know-how. From the previous problem list on decision problems, the ASK problem, the Cassandra syndrome or the inert knowledge problem are typical examples of this group. The following quote from a production engineer gives an example of this type of manager-caused problem.

> *"I think it's actually worse if a manager has a technical, but outdated, background. Not only do I have to inform him, but also re-educate him on the changes that have taken place since he left his engineering job."*

The third type of knowledge communication problems is caused by the mutual behaviour of experts and managers, including their experiences or attitudes (e.g., reciprocal stereotypes and role misunderstandings). Examples from the list of concepts that belong to this group are lacking feedback on both sides, the set-up to fail syndrome, groupthink, and ingroup outgroup behaviour on both sides.

Fourth, we see problems caused by the interaction situation of the expert-manager interaction, such as time constraints, communication infrastructure, distractions, interventions from others, etc. The problem of information overload above can arise due to the time constraints in a communication situation. But the hidden profile problem can also be due to the communicative situation, where the background of the participants is not fully revealed or discussed at the beginning of a manager-expert interaction. The following quote from an energy specialist illustrates this at times problematic interaction situation:

> *"As an analyst and energy expert it's tough for me to inform managers or investors about a promising technology when they have just heard five such optimistic stories in the preceding expert presentations."*

The fifth and final type of knowledge communication problems includes issues that are caused indirectly by the overall organisational context of managers and experts, such as their organisational constraints and their differing tasks, priorities and interests. The 'micropolitics of knowledge' concept listed above would be an example of the (negative) impact of the organisational context on the transfer of knowledge. The following two quotes, both from IT specialists working in the financial services sector, illustrate this important problem area.

> *"Managers and we just seem to have different priorities and sensibilities. We look for quality and reliability, whereas they focus on time and money."*

> *"As specialists, we find it frustrating that we're not informed when priorities or responsibilities change. Whether that's due to internal politics or external market changes, we need to be in-formed if the overall context of our assignment or even the people commissioning our work change."*

From this problem classification, we can derive requirements for high-quality knowledge communication: High quality interactions between experts and decision makers can be possible if experts adapt their communication style and content to the needs of decision makers, if managers fully brief experts on their needs and give them explicit and regular feedback, if experts and decision makers develop relationships of mutual trust and respect, if their interactions are supported by adequate infrastructures and tools, and if their organisational environment allows them to be transparent and direct in their reciprocal communication. Having examined and classified existing knowledge communication problems, we can now look at their implications for knowledge management research and practice.

6. Implications and future trends

Many studies in knowledge management examine the structural, macro aspects of knowledge transfer on an organisational level (Szulanski, 1999). There are also studies that examine the general motivational barriers to such transfers (Husted and Michailova, 2002). The field of knowledge communication, by contrast, examines the micro perspectives of knowledge transfer, thus highlighting the role of adequate or inadequate communication behaviour patterns for knowledge transfer. These examined patterns go beyond the question of motivation and encompass issues such as the use of adequate language, timing, group interventions, or media use for knowledge transfer. This article has defined this approach as knowledge communication. It has outlined the various problems that exist when individuals (particularly experts) communicate their knowledge to others (e.g., managers). This problem jostle can lead to improved communication knowledge for knowledge communication. Managers and experts alike can use it to label and thus signal emerging communication issues and consequently reduce potential conflicts through explicit references to issues such as stereotypes, lacking feedback, or unnecessary details. Future knowledge management research should build on these insights and examine ways of facilitating and thus improving knowledge communication. This can be achieved through such tools as knowledge visualisation suites, dialogue techniques, or knowledge elicitation methods. In doing so, future research should pay particular attention to the influence of (expert and manager) behaviour and to situational and organisational factors that affect the quality of knowledge communication.

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