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# Knowledge Overlapping Seminars: Conversational Arenas Supporting Joint Directed Action in Projects

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*The aim of this paper is to test and evaluate a designed conversational seminar—the knowledge overlapping seminar (KOS)—as a support for joint directed action in projects. This conversational arena is designed to support the process of co-constructing shared understanding in projects with the aim of delimiting misunderstandings and creating knowledge overlap between people coming together from different organizational contexts. As misunderstandings often rise in projects among people who don't share the same language due to their belonging to different organizational contexts, there exists a need to develop methodologies that will assist in supporting the co-construction process of shared understanding in projects. This study proposes a designed conversational seminar for this purpose. KOSs are designed to be conversational arenas in which members of a project team have an opportunity to guide one another in their respective different domains of knowledge related and connected to the common project goal. The design of KOS aims to avoid conversational obstacles to effective knowledge overlap between members from different organizational contexts and from different knowledge domains, with special emphasis on avoiding prestige. The KOS has here been evaluated as being a promising conversational "tool" for application in projects with a view to support joint directed action by achieving a shared understanding of the project goal and delimiting misunderstandings, with improved efficiency, quality, and, ultimately, more satisfied customers as a result.*

*Key words: conversational arenas, knowledge overlapping seminars, knowledge overlap, joint directed action, misunderstanding/-s, project management, sense making*

## INTRODUCTION

Interest in project management and project-based organizations has increased significantly in recent decades. It has been contended by some authors that project-based organizations perform better than other organizations because they integrate diverse resources and expertise in an efficient and flexible manner (De Fillippi 2002; Lindkvist 2004; Sydow, Lindkvist, and DeFillippi 2004; Kaulio 2007; Masters and Frazier 2007). Others, however, have claimed that many projects are suffering from significant delays and cost overruns (Ayas and Zeniuk 2001; Engwall and Westling 2004), as increasingly large and complex projects require partners who are drawn from a wider diversity of occupational groups and knowledge domains (Beynon-Davies 1995; Boland and Tenkasi 1995; Cronemyr 2000; Bechky 2003; Simpson, Large, and O'Brien 2004; Jackson and Klobas 2008). Because these people often have different domain-specific languages (Bragd et al. 2008), this significantly increases project complexity in terms of interpersonal relations, information coordination, learning activities, and politics (Sense 2004). Indeed, a lack of clarity with regard to the basic definition and objectives of a project has been identified as one of the most significant causes of project failure (Engwall and Westling 2004; Koning et al. 2008). In many cases, this lack of clarity can be ascribed to conflicting values and communication difficulties between different occupational groups or

knowledge domains (Donnellon, Gray, and Bougon 1986; Cronemyr 2000; Simpson, Large, and O'Brien 2004). To overcome these problems, strategies for facilitating the co-construction of shared understanding in projects would appear to be vital.

In response to this need, this study describes and evaluates a conversational arena that is designed to create shared understanding in a project with the aim of supporting joint directed action (JDA); that is, where separate and/or collaborative actions are continuously aligned with a common objective (Mauléon 2009). The approach, which is known as a "knowledge-overlapping seminar" (KOS), was originally designed by the second author and the concept was first described in Cronemyr (2000). KOS, designed as a conversational arena, facilitates individual and collective reflection among people from local organizational contexts (here also referred to as knowledge domains) in relation to a specific topic or object (Star and Greisemer 1989). Drawing upon relational theory (Shotter 2005; Gergen 2007), KOS encourages conversational and reflective activities with a view of co-constructing shared understanding of a common objective with the aim of facilitating JAD (Mauléon 2009).

The remainder of this paper is structured as follows. Following this introduction, the theoretical framework of the study is presented; this includes a discussion of diversity in projects and a detailed description of the nature of a KOS. The paper then presents an application of KOS in a case study; this includes a description of the research setting, research methodology, planning of the KOS, and means of data collection and assessment. This is followed by a presentation of the results of the application and a discussion of the findings. The paper concludes with a summary of the main findings and implications of the study.

# THEORETICAL BACKGROUND

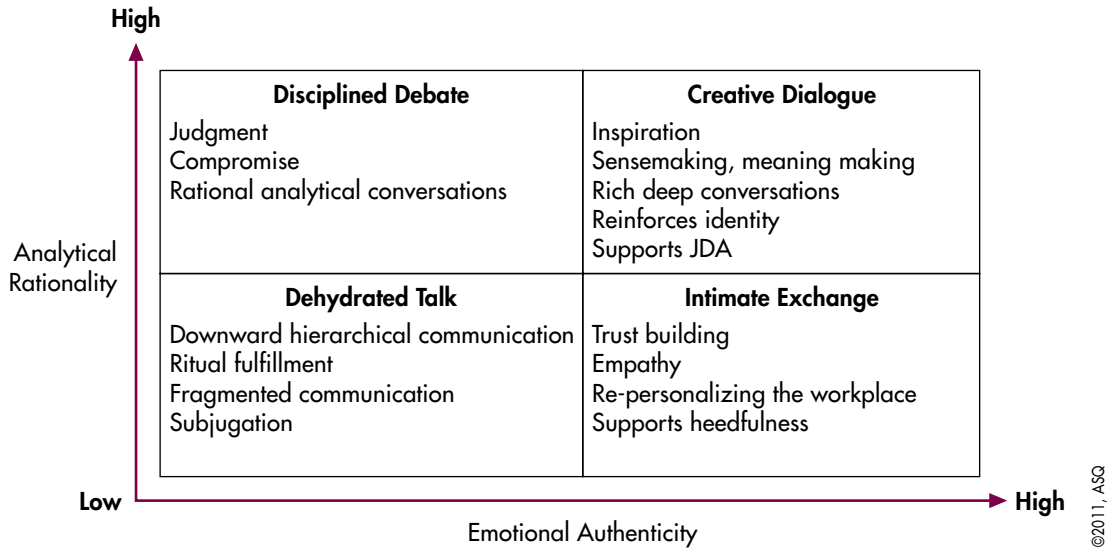
## Bridging Diversity in Projects

A pioneer of the quality movement, Walter Shewhart (1939), drew upon conceptual pragmatism (Lewis 1929) in emphasizing the importance of common concepts in achieving common action. Since then, many other authors have noted that a lack of common understanding of key concepts is a significant cause of misunderstandings and a potential barrier to cooperation in shared projects (von Wright 1957; 1971; Naess 1968; Pålshaugen 2001).

A common source of such misunderstandings is that people often perceive different meanings when contemplating what is ostensibly a "single" concept. Boland and Tenkasi (1995) developed the idea of perspective making and perspective taking in arguing that misunderstandings result because different areas of expertise or knowledge domains within an organization tend to have divergent perspectives. Misunderstandings in organizational projects can then arise from simple mishaps in communication among people who don't share the same perspective (Naess 1968; Simpson, Large, and O'Brien 2004) and/or the specialized language of a particular knowledge domain (Naess 1968; Argyris, Putnam, and McClain 1985). As Argyris, Putnam, and McClain (1985) observed, words take on particular meanings within a given community of practice, and the competence required for understanding these meanings is acquired only with actual membership of a particular community of practice. As a consequence, what a person means to communicate in one community can be perceived in a completely different way in another community; indeed, misunderstandings and misconceptions can arise without the person being aware of the fact. According to Mauléon, Bergman, and Alange (2000), unnoticed misunderstandings are often grounded in "taken-for-granted" communication, whereby people presume everyone else has the same understanding of certain key concepts in the projects being undertaken. In an attempt to address the problem, Mauléon, Bergman, and Alange (2000) argued for reflective arenas to support an increased awareness of the different meanings common concepts can have within a given organization.

Management of conversations has been suggested to promote a shared understanding among project members (Weick and Roberts 1993; Sense 2004; Mengis and Eppler 2008; Jackson and Klobas 2008). Management of conversations is about narration and reflection,

**Figure 1** A map of conversations (Gratton and Ghoshal 2002, 212).




which can be used for the creation of a shared understanding and a relatively homogenous view of shared tasks and how they should be carried out (Boland and Tenkasi 1995; Gratton and Ghoshal 2002; Mengis and Eppler 2008). The role of conversation has received much attention in organization management (Gratton and Ghoshal 2002). However, little attention is paid to the quality of conversations with the potential result of so-called "...dehydrated, ritualized talk that add no value to anyone." (Gratton and Ghoshal 2002, 209). As a means to support an increased awareness of the quality of conversations in meetings, Gratton and Ghoshal (2002) identified four different types of conversations that give different results in organizations (see Figure 1). These are *dehydrated talk, disciplined debate, intimate exchange,* and *creative dialogue.* The differences in these conversations lie in the different levels of analytical rationality and emotional authenticity. Depending upon which type of conversation takes place (for example, a meeting), there will be a different outcome.

*Dehydrated talk* is communication that neither supports analytical rigor nor emotional authenticity. Having winners and losers signifies this type of communication where rituals, formats, and prearranged boundaries need to be considered and respected. The parties involved don't expect to develop any new insights or collectively come up with any new conclusions. This type of communication is about etiquette: when to speak, what topics to cover, where to sit, and the conversations circle around the same known information and ideas with predetermined processes and outcomes. These conversations are oftentimes identified in meetings with tightly defined agendas with no time for reflection. Communication is downward hierarchical, with a senior person giving information to a junior, who oftentimes already has the information.

*Disciplined debates* are conversations that are highly analytical but low on emotional authenticity. Falsification and hypothesis testing are in focus within these conversations. The Socratic way of asking questions is central to the disciplined debate. These conversations need a "Socrates" as a source for vigorous and disciplined questioning. A focus upon relevant information is essential for these conversations and provides different information for different conversations. To ensure the latter, individuals with relevant knowledge and expertise are brought into the group.

*Intimate exchanges* are conversations high on emotional authenticity but low on analytical rationality. These conversations focus on exploring each other as human beings, to explore one another on a personal level, as this is the basis for creating trusting

relationships. These conversations are deep emotional conversations about oneself and one's relationships with others, and about values, philosophies, and beliefs, such as one's philosophy for managing. The aim of "intimate exchange conversations" is to form relationships with others. To have an emotional conversation, one needs to recognize the individual and his or her feelings and emotions, and legitimize the roles of these feelings and emotions in the day-to-day functioning of the organization. Examples of questions in this type of conversation could be: "Why can't we work together? Do we recognize what this is doing to our clients?"

*Creative dialogues* are conversations that are high in analytical rationality and high on emotional authenticity. This type of conversation is creative, insightful, and energizing, in which one moves from fragmentation to unity. These conversations are deeply grounded in facts and at the same time profound in regard to talking about the values of the firm and how these could be translated into action. The combination of feelings and data of rationality and authenticity help create new thoughts and ideas, as well as help build the commitment necessary for individual and collective action.

Depending upon what outcomes managers want from meetings, focus and attention is needed as to the quality of conversations in them and in the organization as a whole. To achieve shared understanding in projects and JDA (Mauléon 2009), creative dialogue (Gratton and Ghoshal 2002) and reflection needs to be supported, as it is within this relational conversational space (Bakhtin 1986; Shotter 2002) that complexities, ambiguities, doubts, and difficulties can be addressed and heard in a manner that encourages relationships and the co-construction of shared meaning (Hosking and McNamee 2006; Gratton and Ghoshal 2002); in short, creative dialogues support the co-construction of common concepts required for common action (Lewis 1929; Wittgenstein 1953; Shotter 2002; Gergen 2007; Gratton and Ghoshal 2002).

It is in accordance with this thinking that this paper introduces the KOS as a conversational "tool" in which project team members can explore their various knowledge domains and reflect upon their relation to the main objectives of the project without the difficulties of continuously having to address prestige. In short, the KOS is designed to encourage, support, and facilitate creative dialogue (Gratton and Ghoshal 2002), with the main purpose of supporting the co-construction of a shared understanding of a common goal, thus facilitating JDA. The characteristics of KOS are explored in greater detail next.

# Knowledge-overlapping Seminars

### Objectives

The KOS is designed to be a conversational arena that supports creative dialogue and has three objectives: 1) to support knowledge overlap by means of stimulating project members to talk about how their own domain-specific knowledge and that of others are related to the common project goal (or the tasks of the whole team if it is not a project); 2) to enhance an awareness of the existence of different perspectives in the definitions of common concepts (such as a project goal) within the project and/or organization; and 3) to support the co-construction process of a shared understanding of common concepts used in the project and/or organization.

### Participants

Three types of participants are involved in a KOS: 1) a guide; 2) a facilitator; and 3) participants. The *guide* talks about his or her domain-specific knowledge in relation to the common project goal. It is important that the guide is the *only* person present from his or her domain because this ensures that: 1) the discussion does not include domain-specific details that are beyond the comprehension or interest of the other participants; and 2) the guide does not have to justify his or her description of the job to a person within the same domain who might have a different view (thus avoiding issues of intra-domain "prestige").

The *facilitator* should be trained in conducting a KOS, as the aim of a KOS is to support creative dialogue (Gratton and Ghoshal 2002), as this type of communication and dialogue delimits the issues of

prestige. Having a trained facilitator is further necessary, as creative dialogue may open up suppressed emotional tensions within the group and organization; emotional tensions are necessary to acknowledge, as these may further support a conversational climate necessary for JDA (for more on this see Mauléon 2009; Mauléon and Ollila 2009). To further avoid problems of prestige and politics, the facilitator should not be a manager of the guide or the participants. The facilitator's role is to provide assistance with the seminar by asking apparently simplistic questions of the guide (such as: "Why is this done?" "On what basis do you make these choices?" and "How do you reason when doing this?"), rather than functional/technical questions (such as "What is the best way to do it?" or "Who should do it?"). Without appearing to cross-examine the guide, the facilitator thus steers the conversation toward a more profound understanding of the guide's domain-specific knowledge. The facilitator must be observant to ensure the conversation is kept on a level at which all participants can be involved in gaining an understanding of the guide's role and domain; if necessary, the facilitator asks the guide to repeat or clarify what has been said.

The *participants* should be from the same knowledge domain so they can relate to each others' questions; however, their knowledge domain must be different from that of the guide (as noted previously). Although they are from different knowledge domains, the guide and the participants should share a common task or a common goal in a project. This ensures that the topics discussed in the KOS are always related to the domain-specific knowledge needed in the specific setting; moreover, it diminishes the likelihood of either the participants or the guide engaging in defense of their own domains. The focus of the KOS is always on the overall task or goal.

### Planning for a KOS

Planning for a KOS proceeds by several sequential steps:

- Step 1: Identify the need for knowledge overlap in a project with people from different knowledge domains, and find a suitable facilitator. (The project manager or project steering committee is responsible for this step.)
- Step 2: Define the major knowledge domains (two, three, or four domains). (The project manager and KOS facilitator are responsible for this step.)
- Step 3: Conduct an initial exploratory meeting with the whole team. Note that this is not a KOS, but an introductory meeting (IM) for a KOS (for more about this meeting, see Mauléon 2009; Mauléon and Ollila 2009). People from each domain define their specific task in relation to the project goal in one sentence. When all domains have defined their tasks, the whole team works together toward an agreement of the common task and goal of the project. This process may take some time and should not be hurried, as this is important for the success of the future KOS. All participants need to feel an ownership of the commonly defined project task and goal before conducting the KOS. (The KOS facilitator is responsible for this step.)
- Step 4: From each domain, select one guide and two to six participants. Prepare the guides individually in how to describe *what* they do and *why* they perform the tasks in relation to the main goal of the project. (The KOS facilitator and the guides are responsible for this step.)
- Step 5: Perform the KOS (as described in the next section). Each guide provides guidance for each of the other domains (that is, two guides present at two KOSs, three guides present at six KOSs, and four guides present at 12 KOSs). (Each guide and the KOS facilitator are responsible for this step.)
- Step 6: Organize a follow-up meeting with the whole team at which the major findings of the seminars are gathered in a suitable format—for example, an Ishikawa diagram (Ishikawa 1982)—and future actions are planned. (The project manager is responsible for this step, with assistance from the KOS facilitator.)

### Conducting a KOS

Each KOS (see step 5) is conducted as follows.

- Phase 1: The facilitator reminds the participants of their co-constructed common task and goal (as defined in the initial meeting described in step 3) and then asks the guide to present his or her task in relation to the common goal of the project.

- Phase 2: The guide describes briefly *what* he or she is doing in the project and how he or she is doing it in relation to the project goal.
- Phase 3: The guide begins to describe *why* he or she is doing it and is repeatedly asked by the facilitator: "Why is this a problem?" and "Why is it so?" If the participants seem hesitant to become involved, the facilitator should initiate this process by asking further open-ended questions such as: "When you do this, what happens?" "How did you come up with a solution like this?" "On what basis did you make this decision?" The aim is to open the dialogue to questions from the floor and create a nonjudgmental atmosphere that encourages inquisitive and friendly conversations (rather than making people feel defensive).
- Phase 4: The seminar should then evolve in accordance with the questions and comments of the participants. There might be questions about matters the guide considers to be self-evident, but these questions should be dealt with on their merits to encourage participants to become aware that it is safe in a KOS to ask questions that might be considered simplistic or may trigger emotional responses from the other participants.
- Phase 5: Misunderstandings should be identified in the course of the seminar, but there should be no suggestion of blame or judgment. Here the facilitator may need to take a more active part. The goal is to identify and highlight misunderstandings, but not to solve them. Possible actions from these findings should be discussed in the final feedback meeting (see step 6).
- Phase 6: The seminar should last no more than three hours (including a refreshment break). These seminars can be quite challenging as a result of the emotional processes triggered in a KOS (for more on conversations and emotional processes, see for example Mauléon 2009); however, with the support of a trained facilitator, a KOS can become a conversational arena (Hosking and McNamee 2006) supporting creative dialogue (Gratton and Ghoshal 2002).

# APPLICATION OF A KOS

## Setting of the Case

This case study was conducted in 2006. The setting was Siemens Industrial Turbomachinery AB in Finspong (Sweden), which employs approximately 2200 people and belongs to the Siemens Group (an employer of approximately 460,000 people in 190 countries). The Finspong Company develops, sells, manufactures, and maintains gas and steam turbines. This involves several highly specialized knowledge domains, which come together for product development and process development. Since 2001, the firm has used the Six Sigma method for process development and improvement.

Six Sigma is a statistical problem-solving methodology based on an advanced form of Shewhart's (1931; 1939) improvement cycle. Six Sigma was introduced by Motorola in the 1980s and was made famous as a result of its use by General Electric in the 1990s. Since then it has spread widely, and it is now used by many companies around the world. Six Sigma is a structured way of solving problems in an existing process by analyzing real process data (that is, "facts"). It is often referred to as DMAIC, which is an acronym for the successive phases of the Six Sigma process—define, measure, analyze, improve, and control.

The purpose of the Six Sigma project chosen for the KOS application was to investigate the root causes of a problem with so-called "modification orders." These orders were issued by the gas turbine engineering department and sent to the service department for execution at customers' sites; however, these modification orders were not being reported back to the engineering department as having been carried out. It was unknown whether the orders were executed but not reported, or whether they were simply not executed at all. There were also varying opinions about the process itself that did not match the official terms of the process. During the define and measure phases of the Six Sigma project, it was established that people involved in the process did not know how or what they should

do; moreover, it was apparent that conflicts and apportioning of blame were occurring among the co-workers involved. There was also confusion about the respective roles of "modification orders" and so-called "service bulletins" (a derivative of modification orders).

# Research Methodology

The study was conducted in accordance with the methodology of a "collaborative action inquiry," which seeks to integrate the social sciences with organizational knowledge to generate actionable scientific knowledge (Lewin 1946; Westlander 1999; Reason and Bradbury 2001). In all forms of action research, the researcher has a close identification with the activities and the direction of change of the object being studied (Westlander 1999); however, the distinguishing feature of collaborative action inquiry is that researchers and organizational members are jointly involved in a process of self-reflection and shared responsibility for the action that derives from the knowledge that is created (Shani and Bushe 1989; Eden and Huxham 1996; Shotter 2002).

The choice of collaborative inquiry this study is based on is the idea that the only way to gain relevant actionable knowledge and to accomplish change is through dialogue, reflective thinking, and all participants acting (Schön 1983; Weick 1995; Shotter 2002). The research context in which this study has been carried out is characterized by the idea that knowledge is created where it is used (Adler and Norrgren 1995; Styhre, Ingelgard, and Roth 2001). In this case, the second author of this paper had been employed by Siemens for 13 years and had actively influenced the changes that had taken place in the organization. It is also the second author who originally designed the KOSs and tested them in a case in a Gas Turbine Development team in 1999 (Cronemyr 2000; 2007); however, to improve the design of the KOS and to further investigate the co-constructional processes from *within* (Shotter 2002), the KOS's collaboration with the first author was initiated, as she has a background as a social scientist.

Being part of the company and the project under study, the second author naturally had the role of an action researcher, while the first author had the role of a participative observer with an ethnographic approach (Silverman 2005), conducting observations during the IM (see Mauléon and Ollila 2009) and the two first conducted KOSs for this study. The ethnographic approach is suitable when one wants to study complex or unfamiliar phenomena and/or processes (Czarniawska-Jorges 1992). Thus, having an ethnographic approach was chosen, as the study not only was aimed at identifying research findings, which could directly influence organizational change as focus is within action research, but also to investigate and collect "thick descriptions" (Geertz 1988) of the co-construction process of shared meaning in the KOS.

The presented research methodology was thus adopted in the present case to: 1) study the applicability of a KOS as a methodology for active change (Silverman 2005); and 2) study the co-construction processes of shared meaning generated by a KOS from "within" (Czarniawska-Joerges 1992; Shotter 2002). The application in this study was conducted in 2006 in a Six Sigma team.

# Data Collection and Assessment

Data for this case study were collected through questionnaires, interviews (see Appendices 1 through 4), and observations of the initial meeting and the subsequent six KOSs. Each KOS lasted between two and three hours. Both authors were present during the first two KOSs, at which the first author conducted observations and the second author took notes (while simultaneously being the facilitator). During the final four KOSs, the second author attended alone due to time limitations. Evaluation questionnaires were handed out before and after each seminar. The answers of the questionnaires, as well as the changes in answers, were analyzed using quantitative methods of hypothesis testing and factorial analysis (see Appendices 3 and 4). Since the number of questionnaires was low (sample size = 12), the quantitative analysis has only been a supplement to the qualitative analysis of interviews.

The interviews were semi-structured (Westlander 1999) and were conducted with all of the participants and guides about one month after the KOS. The interviews were audio-recorded and thereafter transcribed. The participants' answers were thereafter coded, grouped, and compared, and conclusions were drawn.

To improve the reliability of the authors' research, all interviewees checked transcripts of their own interview where all transcripts were accepted without changes. Furthermore, the final paper was reviewed by the project leader of the Six Sigma project. The questionnaires and interview guide were designed by both authors and can be found in Appendices 1 and 2, where one also may find a summary of the interviews.

Several weeks after the KOS had been conducted, the project leader for the Six Sigma project and the second author met to evaluate the merits of the KOS in the context of the project. Before the six KOSs had been conducted, the project leader and the second author had identified the root causes of the problem in the Six Sigma project in a cause-and-effect diagram. This diagram consisted of 12 small branches. After the seminars, the Six Sigma team gathered again and extended the cause-and-effect diagram with the new findings from the KOS. The number of small branches significantly increased from 12 to 40.

## Introductory Meeting (IM)

Both authors were present at the IM at which the methodology and objective of the KOS were presented. At this meeting, the second author made the presentations and the first author conducted observations. The aim of this meeting was to encourage project members to co-construct a shared understanding of the project goal. The results of this meeting can be further studied in Mauléon and Ollila (2009) and Mauléon (2009).

The knowledge domains for the KOS were jointly selected by the second author and the project manager, who came from the business excellence department. The selected domains were: 1) service product managers (responsible for issuing service bulletins); 2) product support engineers (responsible for technical coordination of modification orders); and 3) application engineers (responsible for carrying out modification orders and service bulletins). Three people from each domain were appointed to participate in the seminars, but other tasks and unplanned events intervened and only two from each domain eventually attended. The use of three domains implied six KOSs (as noted previously).

There were nine participants in the initial meeting—the project manager, six people from the three domains (of whom two were not original members of the Six Sigma team), and the two authors of the present study. Two of the people who subsequently participated in the KOS were not present at the IM. After the methodology of KOS had been explained, the participants from the three domains described their specific tasks in the process. The formulation of the common task and objective was quite emotional and difficult (for more on this process, see Mauléon and Ollilla 2009; Mauléon 2009), but the group finally agreed upon the following wording: "To carry out modification orders with the intention of improving gas turbines in the fleet."

After the initial meeting, three people (one from each domain) were appointed as guides; all three guides had been with the company for several years.

# RESULTS

The results are presented in two groups: 1) evaluation of a KOS as a conversational tool for supporting the co-construction process of shared understanding by means of identifying different perspectives and misunderstandings in projects and by supporting knowledge overlap between the people; and 2) evaluation of the design of a KOS as a conversational arena where creative dialogue is supported. Finally, 3) some concerns and delimitations of a KOS are presented.

## Identifying Misunderstandings and Knowledge Overlap

The role of a KOS in identifying misunderstandings and supporting knowledge overlap is presented in the form of two examples. The first shows how a major misunderstanding between two knowledge domains

was identified, and the other describes the knowledge gap that was identified between two knowledge domains, which as such supported the process of knowledge overlap between the two participants.

**Example 1: Identifying different perspectives and misunderstandings**

The first example arose from the recognition that two knowledge domains (service product managers and application engineers) had divergent perspectives concerning the role of two different types of documents (so-called "modification orders" and "service bulletins") within the organization. In particular, the two KOSs that were conducted with the service product managers and the application engineers led to revelations about the use of service bulletins. The application engineers here realized that they should actually work with these bulletins (which were produced by the service product managers), whereas the service product managers came to the realization that, until now, very few application engineers had actually done anything with the bulletins they (the service product managers) had invested a lot of time in producing.

It became apparent at these particular KOSs that there was confusion and mismatch between the two knowledge domain perspectives regarding the nature and role of the modification orders and the service bulletins. As the Six Sigma project leader observed:

> "The modification order [was sometimes packaged] as a service bulletin instead of as a modification order. And when the recipients of these documents described what they did with them they said: "Well, if it is a modification order then I do this, but if it is a service bulletin then I do nothing." They apparently did not know that these were two forms of the same thing. And [hearing this at the KOS] was a 'light bulb moment' not only for me, but also for the person disclosing that it was like this."

Mary, who was a service product manager, made the following observations about the apparent failure of the application engineers to use the service bulletins she and her colleagues created:

> "The purpose of a service bulletin is…to simplify things for the [market] teams. We create a customer letter called a modifying sheet.… There is a lot of work involved in preparing this letter. Everyone puts in a lot of effort…it is a huge process to create a framework upon which everyone has agreed regarding the terminology to be used. And then the Application Department doesn't even send the letter! … It is quite frustrating when this happens with something you have worked hard to achieve."

When asked why the document had not been properly utilized, Mary replied:

> "Well, I think that it is because of unclear roles. It isn't clearly defined who is supposed to do what.… We send the information to the application engineers according to what their leaders have told us to do…[but] the application engineers do not usually have direct customer contact…I think that it should go to sales engineers, who would *sell* this."

Rick, who was from the application engineers, supported Mary with regard to this problem:

> "The letter to customers created by the service product managers is not used by any application engineer I know.… And then the service product managers feel that they are sitting in their workshop over there working on something that nobody uses. Either they are doing something wrong or we are doing something wrong. And we are all wasting a lot of time on something no one later uses."

An underlying theme of perceived criticism and tension between the two domains (service product managers and application engineers) also became apparent. As Mary (from the service product managers) observed:

> "That [criticism] is something we hear all the time…[but] there is just so much to do; we hardly sit around and twiddle our thumbs! No, we work really hard, but then we hear that we don't do enough…[There is] very little understanding [about] what is being done in the different departments."

This undercurrent of criticism caused significant tension between the two groups at the KOS, which had to be tactfully managed by the facilitator. At the KOS, being designed to support and facilitate emotional tensions, the underlying causes of these tensions could be revealed and reduced. It became apparent that the problem was not caused by either group; rather, it was the result of not having a shared understanding of the form and function of the service and the knowledge domain's different roles in the organization.

**Example 2: Identifying knowledge gaps to support knowledge overlap**

The second example concerns the two KOSs conducted with application engineers and product support engineers. Before the KOSs, the application engineers apparently had not been aware of the role of the product support engineers in the organization. They had been in the habit of speaking with the gas turbine engineering department concerning issues that should have been addressed to the product support engineers. This resulted in a very inefficient use of resources and time. The Six Sigma project leaders explained the problem in the following terms:

> "The product support department had obviously lived a rather anonymous life. The service people did not know that they existed as a resource. Instead, they went to the 'old' technicians responsible for these issues; that is, they went to the engineering department that had dealt with the turbines from the beginning. So this was an issue that was identified in the KOS: that there existed a relatively new and unexploited resource."

Chris, who worked as an application engineer, agreed with this analysis:

> "I now have a better understanding of this… we will now spend less time on this task. Instead of asking around and wondering where to get information and who to ask, I now know I can get help with this…so more efficient work really, spending less time on a task, and maybe getting less frustrated for not knowing!"

Rick, who also worked as an application engineer, confirmed this view:

> "I haven't been aware that we should involve them, but when you sit and talk about it, it is quite obvious that this should be the case!"

Fred, who represented the product support engineers, agreed:

> "Yes, there were not many who knew about our role. They did not really know what our role is, but now it has become clearer."

This second example demonstrates that knowledge overlap with the identification of the support available from certain knowledge domains can make a project more efficient and diminish frustrations for all concerned.

## Evaluation of the Design of a KOS as a Conversational Arena

**Role of the facilitator**

Many of the social interactions in the KOS were highly emotional, and it became apparent that the role of the facilitator was essential in ensuring the KOS did not become disruptive and futile. As the Six Sigma project leader observed:

"Because the KOS involves people from diverse knowledge domains who do not share a common language, they often do not know what others are doing. The facilitator's role then becomes important for keeping the KOS on a civilized level, with no personal attacks being committed…and a focus on what the different tasks are."

**Role of the guide**

In the first KOS, the guide representing the service product managers presented her job to the participants representing the product support engineers. However, it soon became apparent that the most important rule of the KOS had been inadvertently broken—the guide was not alone in her domain. When the people were selected for participation in

the KOS, it was not taken into account that one of the product support engineers had previously worked as a service product manager for quite a long time. This person, therefore, had significant knowledge of the guide's domain. In a subsequent interview, the guide observed:

> "He was answering for me all the time. He took over my role. I would not have used the words he used. He said "She means this," and I did not have the time to think. I felt…he would correct me. I felt forced…. It became too superficial because of this. We never came down to the 'why' questions so I could give my own answers. Even though the facilitator tried to steer the dialogue, it did not work. He [the product support engineer] was too experienced in the role of a service product manager. Still, I have to admit that it started me thinking about why I am doing the things I do."

As a result of this error in selection of participants, there was a general feeling that the first KOS had been a failure. But instead, this KOS showed the importance of keeping to the rule of not having "same" domain participants being guide and participants. This KOS further disclosed the importance of keeping to the rule that the guide needs considerable experience in his or her role to ensure a rich dialogue is established and continuously can be supported in the KOS.

### Absence of management

The interviewees were of the opinion that not having a manager present was important in the design of the KOS. The absence of management was beneficial in terms of the openness of the dialogue and the participants feeling free to ask any type of question. The Six Sigma project leader was of the opinion that this was a major factor in ensuring the KOS worked so well compared with "ordinary" meetings:

> "It is this [the absence of management] that separates these seminars from departmental meetings that are steered by the boss. It is important that the group feels that they are allowed to ask any questions and talk about whatever they feel is necessary. I think this is the strength of this method—that there is no hierarchical thinking and that KOS gets people together who really are doing the job…giving them a chance to get together and talk."

## Concerns and Potential Delimitations of KOS

Although the general opinion was that the KOS was a good way to get all members of the Six Sigma project committed, some concerns were expressed. In particular, a few participants were uncertain about how the KOS should be documented and how the information gained in the KOS might be used in the project and spread in the organization as a whole. Rick (from the application engineers) made this observation:

> "I hope that the gaps that we identified when we sat and talked can be remedied. But I do not know how this is to be done…I am a little anxious as to how you [the researchers and project leader] are going to manage this."

In this particular application of KOS, this was not a problem, as the project was a Six Sigma project. In such projects, the task of gathering and spreading the information falls upon the project leader (the so-called Black Belt). However, this is an important issue to address if applying a KOS in other settings that might not have designated information collectors and spreaders. There needs to exist a strategy for collecting the data and thereafter plan for how to spread this information in a useful manner.

A few of the participants in the presented KOS also perceived potential difficulties in terms of personal time commitments. As one of the participants, Paul, observed:

> "To be honest, if the management group had not told me that this [the KOS] was a priority, I would not have changed my schedule."

Similar comments were made by another participant, Chris, who had initially been daunted by the prospect of a three-hour KOS:

> "When I first got there I thought: 'Oh, are we going to sit here that long!' But it was quite well planned really."

Despite these initial misgivings, the participants of the KOS subsequently thought more people should have been involved. Although they initially believed there would be difficulties in spending so much time in a KOS, they subsequently thought it had been worth the time they had invested. However, it was apparent that support for the KOS from management is a prerequisite for getting people to attend in the first place.

# DISCUSSION

It is apparent from the findings of the presented KOS that the project members from the different knowledge domains had divergent understandings of what they were supposed to be doing and what they actually did related to the overall project goal. The project members were, initially, quite convinced that they had a shared understanding of these matters; however, as the dialogue and reflective process proceeded in the KOS, they identified several divergent perspectives and misunderstandings in their project.

In the example of the confusion concerning the service bulletins and modification orders, the authors found that the different knowledge domains—application engineers and service production managers—had interpreted the two differently. They found that the service production managers producing the service bulletins see them as being a business opportunity, whereas the application engineers do not and thus do not introduce them to the customers on site, but often simply install the adjustments presented in the service bulletin for free. Here there is a discrepancy between the interpretations within the knowledge domains. Service production managers have identified the difference of the service bulletins and modification orders, seeing the service bulletins as business opportunities where the application engineers see the modification orders as simply being "maintenance information providers" of the specific gas turbine and do not work with the service bulletins at all.

In this example, the two knowledge domains—service production managers and application engineers—began the process of what Boland and Tenkasi (1995) call "perspective making and perspective taking" in their KOS. With the support of the facilitator, the actors representing the two knowledge domains slowly approached each other's interpretations of the modification orders and the service bulletins through creative dialogue (Gratton and Ghoshal 2002). In this particular KOS, the representatives from the two domains gained an increased understanding of the role of the respective knowledge domains in relation to the project goal; thus, knowledge overlap in the project between the two representatives from the two knowledge domains had begun.

Although the representative from the service product managers had quite a clear picture of the role of the application engineers, she raised some concerns regarding their (that is, the application engineers) lack of a commercial perspective, and criticized this. Her concern was further supported by one of the application engineers when he described his lack of knowledge of the different roles of the service bulletins and the modification orders; he did not know these were "two sides of the same coin," a fact that undoubtedly was costly for the company. Here this particular KOS supported the identification of potential tensions between the two groups.

At the beginning of the KOSs, the actors from the different knowledge domains were somewhat oblivious and sometimes critical of the role of the other actors and their knowledge domains in the project. As the KOSs progressed, however, the actors approached each other's perspectives in a manner in which an awareness and acceptance of the existence of other perspectives of the project and project goal became apparent. Thus, by supporting knowledge overlap through a KOS, the actors are presented with the possibility to co-construct a shared

understanding of the purpose of their various roles in regard to the overall project goal. This could be ascribed to the design of the KOS, as this is designed to be a conversational arena (Hosking and McNamee 2006) that supports creative dialogue (Gratton and Ghoshal 2002) with the intent to remove any perception of "them" and "us." In the following interviews, the authors further learned how the participant of the KOS describes an understanding of the necessity of supporting conversational seminars such as a KOS, as these can support JDA in the project.

In summary, the process of the KOS resulted in an increased understanding among the project members as to *what* they do, *why* they do it, and *how* they do it; moreover, they gained an increased understanding of how this is related to the overall goal of the project. The whole process of KOS was assessed by participants as being a valuable way of creating a shared understanding of the project, thus facilitating JDA in the project.

# CONCLUSION

It is contended that misunderstandings are rare in closely connected groups with members who share a common language (Mead 1934; Naess 1968; Argyris, Putnam, and McLain 1985); however, in today's project-oriented organizations, complex projects predominantly involve multiple knowledge domains in which individual project members don't share a common language and shared understanding. It is likely that this may be one of the main causes of misunderstandings and costly disruptions in these complex interdisciplinary projects. Hence, more than three quarters of a century later, Lewis' statement "common concepts for common action" (Lewis 1929) still has validity, and the need for common concepts has not decreased. On the contrary, the purpose of modern quality management initiatives like Six Sigma and Design for Six Sigma is to find root causes to quality problems, such as failing to meet customer expectations on delivery and functionality of products and services. Even though these failures normally are defined in a technical manner, the underlying root causes can often be traced back to misunderstandings between people (Cronemyr 2000).

This study has described the KOS and has demonstrated in a case study that the KOS can be a successful conversational tool in supporting creative dialogue in which the co-construction of a shared understanding may proceed. In the presented KOS, the authors find how the participants were able to adopt new and efficient ways of working together by approaching and acknowledging differences in interpretations of the project goal and through an increased understanding of the roles of others in the project. The authors claim that KOS may be a useful conversational tool in the pursuit of "common concepts for common action."

Despite the success in this case, it is not possible to claim that the KOSs conducted in the present case are capable of changing the conversational culture of the whole organization with regard to an increased awareness of ambiguity and differences in meaning and understanding. To achieve such an outcome, management needs to organize KOS seminars on a regular basis and incorporate KOS as a conversational tool that project managers can use in multidisciplinary projects. However, it can be reasonably claimed that a seed has been planted within the participants of the KOS with regard to new ways of thinking and their approach to others, which has the potential to influence other actors within the organization in their day-to-day work practice. However, to see such effects, longitudinal studies should be conducted.

From a managerial point of view, it should also be noted that the KOS has been designed, tested, and evaluated in a typical Scandinavian management culture, a so-called "fulfillment-oriented culture" (Trompenaars 1993; Cronemyr 2007), which is characterized as egalitarian and person-oriented. Whether KOSs will work in other cultures and if so, how to organize KOSs in that type of setting, remains to investigate.

Finally, given that this study was conducted as action research, there are other limitations of the work. From this study, it cannot be proved that a KOS will work in any project. Still, as generalizability is

not the main purpose of action research, the outcome of the application was very successful for the "clients" in this particular project. Given these limitations, more applications in other settings would be valuable in providing more generalizable results.

In summary, noting the limitations presented, this study has shown that a KOS can be a successful conversational tool in supporting creative dialogue in organizations and projects. As such, a KOS may support the process of co-constructing a shared understanding, thus facilitating JDA in projects and organizations.

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# APPENDIX 1: INTERVIEW GUIDE

*Translated from Swedish*

**Introduction**

**Background**

1. Name
2. Age
3. Number of years at the company
4. Position
5. Number of years in current position
6. Previous position
7. Education

**The purpose of the KOS**

8. What was the purpose of the KOS?
9. Did the KOS turn out as you expected? Explain.
10. How did you experience the KOS?
11. How do you rate the KOS as a seminar? Pros and cons.

**Opinions and perceived effects of the KOS**

12. Does the KOS (this type of seminar) change the view and understanding of what is going on in a project?
13. Do you experience there are knowledge gaps between people in your organization, that is, that people think they know what others are doing without having the big picture?
14. Do you think that a guide in a KOS can facilitate the overlapping of knowledge between individuals from different domains?
15. Have you experienced yourself that you did not have a clear view of what others were doing in the project?
16. Have you experienced that others did not have a clear view of your role in the project? If so, what do you think was the reason?
17. What effects do you think performing the KOS will have on the project? Influences on understanding? On activities?
18. Will you benefit from the KOS in your daily work? Please give examples?
19. What is your overall onion about the KOS? What was your greatest impression?
20. Do you think your organization should continue to arrange the KOS?
21. What could be altered or improved?

**Ending**

# APPENDIX 2: SUMMARY OF INTERVIEWS

*Translated from Swedish*

**Summary of opinions given in seven one-hour semi-structured interviews conducted approximately one month after six KOS**

**Topic**

Summary of opinions_____

**Knowledge gaps between people from different domains**

There are knowledge gaps. They were found in the KOS. One participant thinks "others have more gaps than I do."

**Opinions about others**

Some think others are doing unnecessary activities and that they are not doing the right things.

**Expectations before the KOS**

Most participants say they were skeptical to the KOS before the seminars. "Yet another three-letter abbreviation."

### Start-up meeting and common goal

Formulating the common goal in the start-up meeting was "difficult" but "useful." It would have been better if all KOS participants had been present in the start-up meeting.

### What happens in a KOS?

You start to speak in a new way that you are not used to.

A "good KOS" is when you "go down" to the why-questions.

Hidden problems and misunderstandings appear.

### The guide

The guide should be alone from his or her domain. He or she must be skilled in his or her domain. He or she should prepare his or her own presentation.

### The facilitator

The facilitator should help to put "silly" questions.

The facilitator should remind of the common goal.

The facilitator should steer the dialogue away from "solutions" toward "why questions."

### Number of participants

All think there were too few participants. Some suggestions on how to get more: Detail people to participate, or overbook (and expect some not to show up).

### Managers present in the KOS

Managers should not be present. If so, one would not put "silly" questions. Managers do not know the details of the domain as others do.

### The effects of the KOS

Misunderstandings have been found.

Root causes to problems have been found on a more profound level than before.

You learn new things.

You get new contacts and it is easier to cooperate after the KOS. You eliminate double work.

Personal knowledge transforms into common knowledge.

You realize others' expectations on yourself.

You get more respect for others.

### More KOSs?

There are several suggestions to use a KOS in ongoing projects but also directly between groups in the organization.

### Comparisons to other types of meetings

Compared to "ordinary" meetings, it is a "special feeling." No threat. You keep a low guard. You are on neutral ground. You are away from the ordinary office.

### Why a KOS in a Six Sigma team?

A KOS fits in "Six Sigma > Analyze > Process Door." Such methodology is missing in Six Sigma training.

The alternative—detailed process mapping and process analysis—would have taken much longer (time that was not available).

Misunderstandings are difficult to quantify.

### Personal use of the KOS

All but two say: I have realized what others do and what I am expected to do. I have seen the interdependencies to others.

One person says: The picture of overlapping domains [shown in the start-up meeting] has made it easier for me to communicate.

One person says: Nothing was new to me.

One person says: I cannot say if it was of personal use for me, I do not remember what we talked about.

# APPENDIX 3: QUESTIONNAIRES

*Translated from Swedish*

**Questions before the KOS:**

**A1:** How much do you know about WHAT is done within the guide's domain?

1= I know nothing.

2= I know a little.

3= I know some.

4= I know a lot.

**A2:** How much do you know about WHY they do what they do within the guide's domain?

1= I know nothing.

2= I know a little.

3= I know some.

4= I know a lot.

**A3:** Do you have enough knowledge about the other domain to perform your daily work?

1= I have far too little knowledge.

2= I have far little knowledge.

3= I have enough knowledge.

4= I have more knowledge than necessary.

**A4:** Are there misunderstandings between your domain and the guide's domain in your daily work?

1= Almost never.

2= Sometimes.

3= Often.

4= Almost always.

**Questions after the KOS:**

**B1:** Same as A1.

**B2:** Same as A2.

**B3:** Same as A3.

**B4:** Same as A4.

**B5:** How has your knowledge about WHAT is done within the guide's domain changed due to the KOS?

1= I know less now than I thought I knew before.

2= I know as much as I knew before.

3= I know more now than before.

4= I know much more now than before.

**B6:** How has your knowledge about WHY they do what they do within the guide's domain changed due to the KOS?

1= I know less now than I thought I knew before.

2= I know as much as I knew before.

3= I know more now than before.

4= I know much more now than before.

**B7:** How has your view on the relations between your own work and that of others changed due to the KOS?

1= It has become much more unclear.

2= It has become more unclear.

3= It has become more obvious.

4= It has become much more obvious.

**B8:** Do you have any question, comment, or improvement suggestion concerning the KOS?

Open question

**B9:** Do you have any question, comment, or improvement suggestion concerning this questionnaire?

Open question

# APPENDIX 4: ANALYSIS OF QUESTIONNAIRES

**Analysis of questionnaires**

Notice: Since the number of questionnaires was low (sample size = 12), the quantitative analysis has only been a supplement to the qualitative analysis of interviews.

For the purpose of analyzing the "impact" of a KOS, a summary variable was defined as:
Score = (**B1**-**A1**) + (**B2**-**A2**) + (**B3**-**A3**) + (**B4**-**A4**) + (**B5**-2) + (**B6**-2) + (**B7**-2.5)

Answers from questions **A1** to **A4** and **B1** to **B7** as well as **Score** were analyzed to find if there were any significant differences between groups, the KOS, or persons. Correlations between answers of different questions were also analyzed.
Used tools: histograms, ANOVA, chi-square tests, correlation tests, and factor analysis.

Variation of individual values (that is, answers from each person at each KOS):

**A1:** min 2; max 3; median 2; mean 2.4
**A2:** min 2; max 3; median 2; mean 2.4
**A3:** min 2; max 3; median 2.5; mean 2.5
**A4:** min 1; max 3; median 2; mean 2.1
**B1:** min 2; max 3; median 3; mean 2.9
**B2:** min 2; max 3; median 3; mean 2.7
**B3:** min 2; max 3; median 3; mean 2.9
**B4:** min 1; max 3; median 2; mean 2.1
**B5:** min 2; max 4; median 3; mean 2.9
**B6:** min 2; max 3; median 3; mean 2.8
**B7:** min 3; max 3; median 3; mean 3.0

**Score:** min +0.5; max +5.5; median +3.5; mean +3.3

There were no significant differences in answers between groups, KOS, or people.

Significant correlations were found between:
**A4** and **B4:** +0.77 ($p = 0.003$)
**A1** and **B6:** -0.68 ($p = 0.014$)
**B5** and **B6:** +0.68 ($p = 0.014$)

The answers to questions **A1** to **A4** and **B1** to **B7** were also investigated using factor analysis. Interpretation of factors after varimax rotation of survey answers (translated from Swedish):
Factor 1: "My knowledge has increased due to KOS."
Factor 2: "I need to know more."
Factor 3: "I believe there are misunderstandings."
Factor 4: "The big picture has become clearer."

Answers from questions **B8** and **B9** were incorporated in the analyses of the semi-structured interviews.