

Diversity in Teams: Source of Conflict or Source of Creativity? Investigating Hidden Mental Models ⁴

Edeltraud Hanappi-Egger (edeltraud.hanappi-egger@wu-wien.ac.at), Vienna University of Economics and Business Administration, Research Group Gender and Diversity in Organizations, Austria

Abstract

The workforce in organizations today is becoming increasingly diverse. Consequently the role of diversity management is heavily discussed with respect to the question how diversity influences the productivity of a group. Empirical studies show that on one hand there is a potential for increasing productivity but on the other hand it might be as well that conflicts arise due to the heterogeneity of the group. Usually according empirical studies are based on interviews, questionnaires and/or observations. These methods imply that answers are highly selective and filtered. In order to make the invisible visible, to have access to mental models of team members the paper will present an empirical study on the self-understanding of groups based on an innovative research method, called "mind-scripting".

Introduction

The workforce in organizations today is becoming increasingly diverse. The issues of demographic change have been summed up by Johnston and Packer (1987) and relate specifically to the changing nature of the workforce, and in particular to:

- Gender – increasing numbers of women entering the labor market
- Ethnic minorities – they will be forming an increasing part of the workforce
- Age – the ageing of the working population.

This means that in teams diversity becomes a crucial issue and team members have to deal with heterogeneity. There is much discussion if this leads to higher productivity due to the prevention of group thinking or if this leads to decreasing productivity caused by conflicts and problems. With respect to the business dimension diversity management deals therefore with creating conditions that "minimize its potential to be a performance barrier while maximizing its potential to enhance organizational performance" (Cox 2001: 4). In terms of managing diversity, e.g. Thomas (1990) suggests that managing diversity "means enabling every member of your workforce to perform to his or her potential. It means getting from employees, first, everything we have a right to expect, and, second, if we do it well – everything they have to give". This rather euphoric view has to be questioned in face of group dynamics caused by prejudices, stereotyping and discrimination. Consequently de-motivation and decreasing productivity occur. In other words the principally given diversity in teams can serve as source for conflicts as well as source for creativity.

There is a steadily growing interest in empirical studies focusing on the productivity issues. Jackson et al. (2003) highlight in a survey of empirical studies on diversity in teams the following aspects: "*Most studies addressed the effects of readily-detected, relations-oriented traits, such as sex, racio-ethnicity and age. Together, readily-detected attributes accounted for 89% of the diversity effects reported. The relations-oriented attributes that researchers most often included were sex (included in 34% of studies), racio-ethnic diversity (included in 24% of studies), and age (included in 31% of studies) diversity.*"

The authors criticize that from a methodological perspective most studies do not pay enough attention to the multi-level phenomenon of diversity in organizations/teams and that rather simple methods to investigate diversity issues are applied. Most empirical studies on diversity and the

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effects of diversity are based on methods such as observation, questionnaires and/or interviews. These approaches force the research partners to filter and to clear experiences, opinions and approaches. In order to collect unconscious causalities and levels of references, the paper will present an innovative method called "mind-scripting". Thus the first results of empirical studies made among engineering students in Vienna concerning their "hidden" assumptions and approaches to problem solving and their self-understanding of being a team are presented. The paper will discuss the empirical results in the light of diversity and diversity management theories.

Diversity and Diversity Management in Teams

Diversity management emerges as a topic in particular when organizations have to deal with people stemming from different cultural backgrounds as well as from different work specializations. Cox (2001, p. 3) defines diversity as "the variation of social and cultural identities among people existing together in a defined employment or market setting." Gardenswartz and Rowe (1994) propose a four layer model of diversity, ranging from a) personality (not immediately visible to others), b) internal dimensions (partially visible) such as gender, age, race, sexual orientation, and the like, c) external dimensions (communicable) such as religion, education, geographical location, life style and the like and d) organizational dimensions within the organizations such as management status, work experiences, seniority, work content etc.

People are diverse in the sense that the different dimensions have different meaning and different parameters emerging from individual biographies as well as cultural backgrounds influencing those aspects.

Managing diversity means to consider organization members as entities with different conglomerates of those attributes and providing them with necessary support. Or as Thomas R. (1990) points it out: „Managing diversity is defined as a comprehensive management process for creating an environment that enables *all* members of a workforce to be productive, without advantaging or disadvantaging anyone“. Trompenaars and Hampden-Turner (1977) stress the importance of considering diversity management as entering a process rather than handling it as a single action. Also Stuber (2004) proposes a process-oriented approach including a) initiating diversity management (identifying the business context, understanding diversity, defining diversity objectives, analysis of current situation, identifying strategies), b) realization (top-down and bottom-up introduction of diversity management, diversity mainstreaming in HR-management, communication and marketing), c) process management (establishing diversity management, trust building measures and controlling). Diversity management is a permanent learning process and has far reaching effects for the organizations.

From a business perspective diversity is often seen as source of conflict due to less effective communication, increasing cost caused by identity harassment and discriminating behavior, all phenomena causing cost. Since avoiding diversity is not feasible, organizations have to cope with diversity in a positive way. Consequently, many firms' mission statements focus on fairness and respect, - but as Adler (1986) shows empirically, it is not enough just to establish heterogeneous working groups, but it is also necessary to manage them (for a critical analysis compare also Hanappi-Egger 2003; Deetz 2003). Diversity management stresses the importance of appreciating diversity and using it in a way to increase productivity. Due to Cox (2001) increasing productivity might be achieved by the following dynamics:

- Employees are strongly motivated by feeling appreciated.
- Diversity Management eliminates (at least partially) misunderstandings and identity harassment.
- Members of diverse teams appreciate mutual learning.
- The quality of problems' solutions increase by integrating multiple perspectives existing in a diverse group.

These positive aspects can only be realized when consciously handled. Walker and Hanson (1992) mention "traditional management practices treated differences among employees as evidence of inferiority. Anyone regarded as different was thought of as "less than" anyone who was a member of the organization's dominant culture. Consequently the kindest approach was to ignore

differences and to treat everyone the same. Today's changing demographics require that corporations develop strategies for integrating workers from highly divergent cultures. "

This means that diversity management in particular in teams has to be implemented consciously and explicitly. This implies internal communication and awareness of concerned organization members. On the other hand diversity and its social role is part of common knowledge of people influencing the process of learning and training. This raises a methodological problem, namely how common knowledge can be made explicit in order to get insights into the mental models of people they refer to when interpreting social situations. Methods such as observations, questionnaires, and/or interviews clearly have some short-comings which will be discussed in more details in the following chapter.

Investigating Diversity Issues in Teams: Some Methodological Remarks

Researchers on diversity in groups normally are aware of entering a complex and multi-faceted field. Consequently several research methods or even a mix of methods are elaborated and applied. As Senge (1990) points out one has to be open for emerging dynamics when intervening in research fields. Taket and White (1996) call their approach "pragmatic pluralism" and see it as a strategy of mix and match, adopting a flexible and adaptive stance, and operationalizing 'doing what feels good'.

Intervention evidently leads to specific group dynamics: Besides the fact that the researchers are specifying the topics of relevance, people being observed or asked questions tend to adjust their answering behavior to the situation. Thus the answers are always filtered and highly selective.

In order to have access to less biased knowledge memory work is applied. The basic idea is to understand memories as narratives people use to make sense out of social experiences. This seems to be in particular interesting when it is of scientific interest what the mental models are people refer to when interpreting and constructing meaning. Thus memory-work focuses on the following theoretical groundings (see also Haugg 1999a): human being incorporates social relations, common knowledge is fragmented and contradictory and the individual has to put much effort into the social affiliation in order to work "coherently", social constructions are made by language and vice versa.

Texts representing memories are deconstructed in order to search for representations of subjects, activities, emotions, motivations, relations and communication. By doing so structures of meaning based on social constructions can be made visible. A similar approach is used in self-reflexive methods (compare e.g. Jensen and Walzer 2003). Additionally memory-work asks for collective deconstruction and is seen as recursive research process.

This methodological understanding seems to be specifically interesting in terms of diversity in teams. Since team members are socialized entities they have a deeply culturally shaped understanding of the self and their environments. Furthermore knowledge on diversity and how to handle it is common sense at least as long as there is no explicit training on how to deal with differences among the group members. Memory work allows for making implicit knowledge visible, therefore it was chosen as adequate method for investigating diversity handling in groups.

The Case-Study: Mind-Scripting of Engineering Students

As already mentioned the basic idea of the presented research was to elaborate the hidden imaginations of being a group of team members. The existing (invisible) mental models serve as level of references for interpreting and sense-making (compare Weick 2002). These references represent common knowledge, which is learned in social interactions. In order to gain access to these unconscious mechanisms an innovative method was applied called "mind-scripting": This approach is based on the "memory-work" of Frigga Haugg (see also 1999b), a German social scientist. Memory-work in some sense questions the traditional scientific understanding in terms of distinction of object and subject, of being able to identify "objective" traits. It assumes – derived from the theory of socialization – that personal experiences are actively interpreted due to collective and individual socialization. Therefore the presumption of this method is that individuals

appropriate social, organizational and professional formative contexts and interpret, transform, select and reconstruct reality according to the mental models acquired within this process. These mental models are not only individually shaped but are also collectively shared constructions of reality. If team members are asked to write texts concerning shared memories, these can be read as contextual, selective and temporal representations of the writer, can be used as source for making mental models visible. The discursive analysis of these texts highlights which causalities are implicitly or explicitly constructed, where contradictions and ambiguities emerge and the like.

Generally speaking, mind-scripting requires a group of about ten to fifteen people sharing a memory, i.e. a concrete experiences (such as e.g. "Last time I applied for a job"). The group members join an introductory lecture on mind-scripting, background, basic ideas and work schedule. After specifying a shared topic the group members are asked to write a brief text (about a half page) in the third-person-style. These texts are anonymously collected and distributed among the members. In the following the texts are analyzed collectively.

The following questions are discussed:

- How does the author present her/himself?
- Which additional people exist in the text and how are they presented?
- Which writing style is used?
- Are there any contradiction, interruptions, assumptions of causalities?
- Which emotions are described?
- Are there any latent stereotypes?
- How does the author overcome contradictions and breaks in logic?

The presented case study is part of a research project on gender-scripts in technological artifacts, financed by the Austrian Ministry of Science, Education and Culture. The aim was on one hand to test the method of memory work in a technical field and on the other hand to get insights into the mental models of reference. Mind-scripting is seen as a combination of memory-work, mind maps and visualization techniques (part of the research was that the students draw pictures coming into their minds when reading the texts of an other author).

Therefore a group of seven students in business computation was selected. The group consisted of four females and three males and worked in two subgroups on projects in which they developed simulations on "aging societies". After a brief introductory workshop they wrote texts on "when I/we made a modeling decision" which were analyzed in three following sessions. The discussions were recorded and a session protocol was written. Additionally the students made mind-maps concerning concepts such as "quality" and they also visualized the role of the future system users of the texts which were distributed randomly by drawing pictures. Finally there was a feedback session in which the method of mind-scripting was discussed.

Concerning the topic of the paper the following aspects were highlighted by the texts:

Although the topic of the text was not linked explicitly to team work, it seems to be an important issue among engineering students, since all texts in some sense referred to it in particular in terms of work organization, project management and development processes. Topics such as group work, group dynamics, division of labor, time handling and structural conditions of team work were highlighted. The main textual outputs concerning **team work** were the following:

- In all texts teams exist, but in five texts the author did not explicitly show up as an actor.
- Diversity of team members was expressed in terms of educational back ground, experiences, interests. The latter was negatively described ("*although the team members had different interests, it was not so much a problem*").
- Shared experiences and communication were positively described.
- Commitments among team members, shared decision making were positively described.

- Negatively connoted was leadership, which was associated with being a source of conflict or demotivation and causing irritation.
- A positive working-atmosphere was strongly connected with no conflicts ("*they quickly agreed upon*", "*the division of labor flew smoothly*").

Also the **division of labor** was described in five of seven texts. In particular negatively mentioned was the unclear division of roles. Generally the texts focused very strongly on the contribution of specific persons (in particular of the authors of the two texts in which they were expressed explicitly). Their part was seen as essential ("*building the foundation, the ground for the future system*") while in the texts raising the question of division of labor more uncertainty was expressed.

Time pressure was mentioned in four texts (the two not referring to division of labor did also not raise this issue). Aspects such as "*long working hours, nights working through, just one week time*" and the like express dimensions of the working culture.

Five texts raise the question of **working contexts** and structural conditions of their teamwork. In some cases the program they had to develop was autonomously chosen (even though there were nor criteria specified), in some cases a tutor or supervisor specified the programming tasks. The relation with the employer (if existing) or supervisors was described very differently as some times supportive and some time making unsure. If the authors mentioned freedom of choice of the programming tasks they described the situations as unclear or uncertain or ambiguous.

Besides these issues there were other topics in the texts (such as quality) but for the purpose of this paper the results concerning team work are interesting. The deconstruction of the texts shows that there are many dimensions playing a role in the assessment of team work. As already mentioned mind-scripting allows for making the invisible visible. Re-calling memories is on one hand expressing experiences but on the other hand there is an active part of constructing meaning and interpretation of experiences. By deconstructing these texts in the groups the authors can participate in the reflection and play both roles: the role of the object (in form of the text) and the role of the subject (as investigator).

The case study showed that besides individual ways of presenting and re-calling past experiences, there are some interesting social mechanisms of constructing meaning. In terms of teamwork the texts threw light on the engineering students' imaginations: It becomes visible that diversity is not seen as explicit topic in their teams. Not a single text mentioned the cultural backgrounds of the team members, five texts did not even specify the constellation of females and males. This could be seen as a sign that in the field of engineering personal attributes are often neglected. The only diversity dimensions mentioned were educational background, experiences in programming and in a single case "interests" without going into more details. In the texts with a diversity reference it becomes clear that this was perceived as being negative. Homogeneity was associated with efficiency, clearness, without friction loss. Generally it was formulated – sometimes implicitly – that the pre-condition of successful cooperation was homogeneity, conflicts and differences in opinions or approaches were assessed as influencing projects negatively. Division of labor is seen as essential without mentioning criteria. The working culture was described mainly in terms of time pressure. The working context clearly was identified as being a crucial factor for the project.

The students appreciated the experiment. During the feedback they said that they found it interesting to see their own way of constructing meaning and to compare it with other group members. They found it in particular interesting that the view of diversity as being a source of conflict was so dominant. Their mind-scripts gave reasons to reflect on this.

Conclusion: The Meaning of the Empirical Results for Theories of Team Work

Lazear (1998) stresses the importance of diversity along the dimension skills, ability and information dimensions, but homogeneity in other dimensions, such as demographics, that reduce communication costs or what he calls "costs of cross-cultural dealing."

Nevertheless several other scholars emphasize the importance of diversity in particular in an engineering setting. This is mainly argued by the assumption that developing technological solutions requires creativity and knowledge. Sutton et al. (1997) suggest that diversity in human resources allows for innovative problem solution by combining the existing different knowledge types a group possesses. As the empirical study shows people have common knowledge on diversity and diversity handling. In the field of engineering the specific professional culture often implies the negligence of personal and social factors, the focus of the technical problem and its solution play the most important role (for a more detailed discussion on the professional culture of engineering see also Hanappi-Egger 2004a).

In order to train a positive approach to diversity it is important to make these aspects visible, the reflection on a-priori assumptions made is important. Hanappi-Egger (2004b) calls this "triple loop learning" based on the idea of Flood et al. (1996). Flood et al. (1996) described triple-loop learning as a cyclic process consisting of three loops: The first loop (the How? loop) is built around the question "Are we doing things right?" The second loop (the What? loop) is built around the question "Are we doing the right things?" The third loop (the Why? loop) is built around the question "Is rightness buttressed by mightiness and vice versa?"

Concerning system design processes these three loops can be adapted to the following steps:

- Single-Loop Learning: questioning the functionality (doing things right)
- Double-Loop Learning: questioning the specification (doing the right things)
- Triple-Loop Learning: questioning the mental models and social scripts

Step one (single-loop learning) and step two (double-loop learning) are well established activities in system development. Proofing functionality and the adequateness of the specification are no trivial tasks, but they are accepted as essential parts in the development processes. Much effort is put on the attempt to grant correctness in syntax as well as in semantic. Step three (the triple-loop) is not yet part of system development, but in terms of reflecting on the a priori social assumption it is necessary. According to the effects of team work this means that by refereeing to (unconscious) mental models specific perspectives are heard and others are oppressed. Diversity as source of creativity is not opened and cannot be developed. As the student group showed it is often not even questioned if diversity could play a role and if how it could be appreciated.

In terms of system engineering this means that besides developing the system, a meta-level has to be established allowing participants to reflect on mental models, on assumptions and in particular on diversity scripts influencing the way of specifying the system. So the questions to be discussed are: How does it come that we came up with this specific specification? Which assumptions concerning social relations in terms of division of work, power and communication did we make? How has our self-understanding determined the system specification?

Clearly there is more research needed to get deeper insights into the role of hidden mental models in dealing with diversity in teams. But the presented piece of research can help to discuss the role of not directly accessible social dynamics in diversity management.

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