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DEVELOPMENT OF A LEARNING PROGRAM TO OVERCOME KNOWLEDGE DEFICITS AND SOCIAL PROBLEMS AFTER ORGANIZATIONAL MERGER

Theme: The Social Processes of OL and KM

Schulz, Klaus-Peter

Department of Innovation Research and Sustainable Resource Management,
Chemnitz University of Technology

Contact author:
Klaus-Peter Schulz
Department of Innovation Research and Sustainable Resource Management

Chemnitz University of Technology
D-09107 Chemnitz
Germany

Telephone: ++-49-(0)371 531 5234
E-mail: Klaus-peter.schulz@wirtschaft.tu-chemnitz.de

Abstract

Considering processes of organizational change such as mergers, very frequently problems occur on an operational level. Difficulties in communication and cooperation are brought about in spite of thorough strategic planning. However, the social aspect and context specifity of organizational practice, incorporated by its members is rarely taken into account.

A case study describes the merger of two multinational corporations in the chemical industry. To overcome knowledge and understanding problems especially on the operational level, a comprehensive training concept has been developed and is currently in realization. The program is based on theory of situated learning, a qualification model which can either be seen as a concept for individual and organizational learning.

Operational problems of mergers

From a rational business perspective organizational mergers are an integration process whose success depends on thorough strategic planning and efficient realization of the integration scenario developed. An integration strategy in general comprises external factors such as information policy for customers and the public, which includes a proposal of expected synergetic effects. Within corporations conceptual planning to integrate operational business is derived from the integration strategy. It typically includes resource planning, organizational restructuring, staff information and training. Furthermore, a milestone plan which determines the time horizon of the integration project is also obligatory.

The practice of mergers, however, often shows that despite these activities severe problems occur during the integration process and proposed time horizons have to be expanded signifycantly. Uncertainty increases the closer the merging process approaches the operational level. The problems go far beyond the ones expected by management and consultants: Workers lack of practical knowledge about new processes and of mutual understanding. Furthermore it can be observed that work under a new formal roof and under changed conditions causes staff conflicts and lack of motivation.

These effects show among other things that merger strategies do not recognize the nature of organizations as social systems in an adequate way (Jansen & Polmann, 2000). Different social systems consist of divergent organizational cultures. The knowledge, thinking and acting of an organization's members depend significantly on the specific organizational context (Vlasic & Stertz, 2000: 249). In other words, the complex and emergent nature of working systems with individuals from different organizational backgrounds and carrying different convictions, interests, theoretical backgrounds and practical knowledge is often not considered a major factor of well functioning cooperation within the system (Ulrich, 1998). Furthermore, from an operational view, worker resistance to change suggests that the existing processes have worked successfully; thus, there are rarely any reasons for change.

Therefore a successful integration program especially for the operational level should take into consideration the nature of activity within social practice. This means the context specifity of knowledge and different convictions and backgrounds of workers have to be taken into

account. Such a process of social integration also requires a long-term perspective since it takes time until the different parties are grown together.

The following case study of a merger between two multinational companies from the chemical industry focuses on the socially motivated effects at the operational level. Together with the merged company a training program has been developed which especially recognizes the above factors. To minimize conflicts and de-motivational effects and to foster individual and organizational development, the program aims to provide the opportunity for the workers affected to create something new out of the experience of the former independent corporations. However, the ability to develop the organization requires knowledge of the whole process and mutual understanding of its principles and theoretical backgrounds. The training program, which is based on a theory of situated learning, considers following the aspects: How can individuals who come from different backgrounds develop shared practical knowledge and how are they able to acquire mutual theoretical knowledge of the working context? How do mergers change the organization as a whole, what is caused by change of its teams and departments and the development of the individuals within?

Activity and community

Before aspects of the development of mutual understanding and knowledge are discussed it may be useful to take a closer look at the characteristics of organizational practice and work: activity within a social context – the community of practice.

The fact that effective concepts to overcome merger problems on the operational level have rarely been developed is due to an 'objectivistic' understanding of organizational reality. This view considers practice as an execution of theoretic concepts and models (Bourdieu: 1979). Thorough analysis of the problems from the perspective of an acting individual within a social community, however, shows that practice is 'subjectivistic' work, not able to be planned, complex and not reducible to singular effects (ibid.). The social situation is already existent and it characterization has to be taken into account (Vygotzky: 1978). Hence the object of scientific study is an actual social situation, which is part of an existing social system or context (Engeström: 1987). Any kind of work activity is therefore to be considered within the context of a social practice.

It may be useful for further analysis to characterize activity and to define the field where activity takes place. Leont'ev distinguishes between the categories operation action and activity (1978). An operation can be seen as a routine about which the individual is not aware. Action, which is formed by operations has a beginning and end and follows sequential procedures. The individual or group performing an action is aware of it. Activity is of a collective nature, systemic and self-organizing, and does not end when a goal is reached. One may rather talk about life cycles then about time horizon (Engeström, 1990). From an analytical view the structure of human activity may be described as an activity system.

Activity takes place in a specific social situation which can be seen as the context for activity. Contexts are spaces of interactive experience, created by people in interaction, in other words "contexts are activity systems" (Engeström, 1990: 79). Organizations and even communities within organizations form their own specific contexts. However, it may be useful to distinguish between two types of contexts: the social situation which represents the framework of

the specific situation or environment of activity, and the methodological context which includes specific methods or technological knowledge (Raeithel, 1983: 82).

An activity system comprises subject, object and the community. Instruments such as mediating artifacts, rules how to act and the division of labor represent the framework in which activity takes place (Engeström, 1987). The activity system "integrates the subject, the object and the instruments of activity to a unified whole" (Engeström, 1990: 79). The subject can be understood as a responsible acting individual within a community. The object can either be a task or a person that shares the activity system with the subject. Participants of an activity system share an understanding of their activities and significance for practice (Lave & Wenger, 1991). Since the activity system can be seen as a systematic and analytical model of the framework of activity it may be useful to consider a community of practice as the actual environment where activity takes place. "A community of practice is a set of relations among persons, activity and world over time and in relation with other tangential and overlapping communities" (Lave & Wenger, 1991: 98).

The nature of theoretical and practical knowledge

Especially in the case of the development of a shared understanding after an organizational merger and furthermore in the development of a new mutual organizational reality, aspects of knowledge as a prerequisite for learning should be taken into account. The individuals from the merging corporations bear in mind, highly specific and tacit ideas about company life, despite very similar theoretic knowledge of how an organization works. Since the individuals are expected to be in a position to cooperate after the merger process, the development of practical knowledge will be one of the main aspects of the learning concept applied. Reflection processes, as a major element of learning, enable the community to bring about existing values and understanding and help to develop a new mutual understanding.

The development of mutual knowledge requires a more detailed consideration of the nature of knowledge and furthermore a distinction of the types of knowledge which may be relevant for the ability to act within a social community. Knowledge in general is not a phenomenon which can be observed, it is just an attribution of what can be seen as a successful performance or description of an action. Therefore, the terminology of 'knowledge' is open to a broad variety of interpretations dependent on basic scientific views. The following table compares the view of a theory of practice, which represents the basis for the concept applied in this context, with the view of cognitive psychology which is still the basis for most of existing learning concepts.

Criteria of distinction:	**View of the cognitive psychology**	**View of a theory of practice**
Focus	Representations within the mind of the individual	Individual as subject in a social situation
Term of knowledge	Knowledge as a mental representation which can be made explicit and generalized Independent from contexts, static	Experience-based, difference between theoretical knowledge and practical knowledge 'knowing' Emphasis on knowing which is tacit, relying on context and can be seen as a process

Term of action	Action as an application of theoretical knowledge Planned processing of rules and procedures	Acting as specific reaction to specific and situated requirements Spontaneous, intuitive, tacit
Meaning of context and situation	Knowledge exists independently of situations in an abstract manner and has to be transferred in specific contexts	Knowing is situated. Social situation represents the context Knowing can be made partially explicit and decontextualized as theoretical knowledge through reflection
Meaning of learning	Declarative: instructional, decontextualized, systematic and planned Active role of the teacher	Knowing has to be generated a new within each specific situation: situated learning Theoretical knowledge as possible background for generating knowing Active role of the learner

Table 1: Different understanding of knowledge, action and learning

Acting within a social situation primarily requires the ability to act, which is a practical type of knowledge. This can be defined as (practical) 'knowing how' (comp. Ryle 1949) or 'knowing-in-action' (Schön 1987). 'Knowing' underlines the process of doing something, the dynamic quality of practical knowledge (ibid.). This type of knowing is intuitive and tacit, the acting subject is itself not aware about its practical knowledge during action (Polanyi, 1966; Dreyfus & Dreyfus, 1986), because, as Polanyi analyses the process of action, the focus of the individual is concentrated on the goal or general intention of the action rather than its single elements[1] (1964). E.g.: The attention of a car driver is concentrated on the road, not on single operations such as pressing the clutch and moving the gear shift. The intuition of action stresses another factor: actions within practice are subject to improvisation. Although most actions have a general goal, the actual performance cannot be planned in advance due to spontaneous requirements brought about through the situated interaction within the activity system (Suchman, 1989; Volpert, 1992).

Theoretical knowledge[2] can be generated out of practical knowledge through reflection. Therefore, knowledge on how something is done can be made explicit. Theoretical knowledge, however, is not sufficient for acting since internal practical knowledge has to be developed out of it. Theoretical knowledge gains relevance within the activity system in the sense of background knowledge, e.g. explaining the correlation between processes and systems or clarifying the use of instruments. The integration of theoretical background knowledge to the performance of an action distinguishes the expert from an experienced actor. The latter concentrates on the best performance of his action but the expert concentrates on process and product in general (Dreyfus & Dreyfus 1986: 226).

Theory, however, can be seen in two different ways. An individual in a community of practice generally develops ideas on how any specific activity is performed. In an interacting activity system these thoughts, convictions and values are shared by the subjects and are

[1] Polanyi describes this process of action as 'tacit integration': Subsidiary elements or details are tacitly integrated to form a whole, which the acting individual is focused on and aware of (1964).
[2] also described as 'knowing that' (Allen 2000)

brought about through cooperation and communication processes. They represent the way the organization sees itself. Since these ideas and convictions rely on a specific context they can be called 'local theory' (Baitsch, 1991; Elden, 1989). Although local theory is a 'theory in use' the actors are normally not aware of it (Argyris & Schön, 1978). Explicit knowledge, such as manuals or readers, is part of an 'espoused theory' (ibid.) which is developed through reflection of processes and of the theory in use. The 'espoused theory' can be described as abstract and presents a general type of knowledge. Although it is not adequate for acting it can help to optimize activities as well as deliver a basis for starting unknown activities within an activity system. A student driver e.g. will be instructed with some knowledge on how a car can be put into motion and which operations have what effects before he starts to drive. The individual may integrate espoused theory into theory in use after frequent application.

Concerning the activity of reflection it may be useful to distinguish between different levels. On an operational level reflection is executed without interrupting the action. Contents of this reflection-in-action[3] (Schön, 1983: 62) are mainly closely related to actions and an alternation between acting and reflecting as "…an ongoing flow of reflective moments of monitoring in the context of engagement in a tacit practice" (Lave & Wenger 1991: 54). This reflection process can be caused by differences between actual and expected results of an action, which may lead to a learning process because action can be redefined. If the flow of action is interrupted through reflection, Schön talks about reflection-on-action (1983: 278). The primary action is overlaid by a secondary action that reflects on the primary one. Reflection-on-action often questions general principles on activity. This distinction, however, is analytical, since boundaries between the two principles of reflection are fluid and strongly depend on the context-specific definition of action and the interruption of it.

These characterizations of knowledge and theory and their meanings within a theory of practice lead to an improved understanding of learning. The focus of learning is on practicing and the development of practical knowledge within a social situation. Hence, a learning concept recognizing these aspects should consider that:

- The emphasis lies on practical knowledge.
- Learning has to be seen in relation to the other subjects of the community.
- Practical knowledge cannot be transmitted but only be developed by an actor in a practical way.
- The active role has to be played by the learner not by an instructor.
- Situations of practice are mostly complex and rarely follow a didactic dramaturgy.

Legitimate Peripheral Participation a theory of situated learning

The model of Legitimate Peripheral Participation, a theory of situated learning described by Lave and Wenger (1991) can be seen as an analytical perspective of learning in practice. The expression situated means a comprehensive understanding of the whole person involved in practice without limitation of time and tasks (ibid.: 33). Activity, be it theoretical or practical, is always situated, it takes place in and with a social system (Rogoff, 1995). The activity of learning takes place within a community of practice, which is, "...a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping

[3] for Schön action is a lasting forthcoming process and therefore in the terminology of Engeström more related to activity.

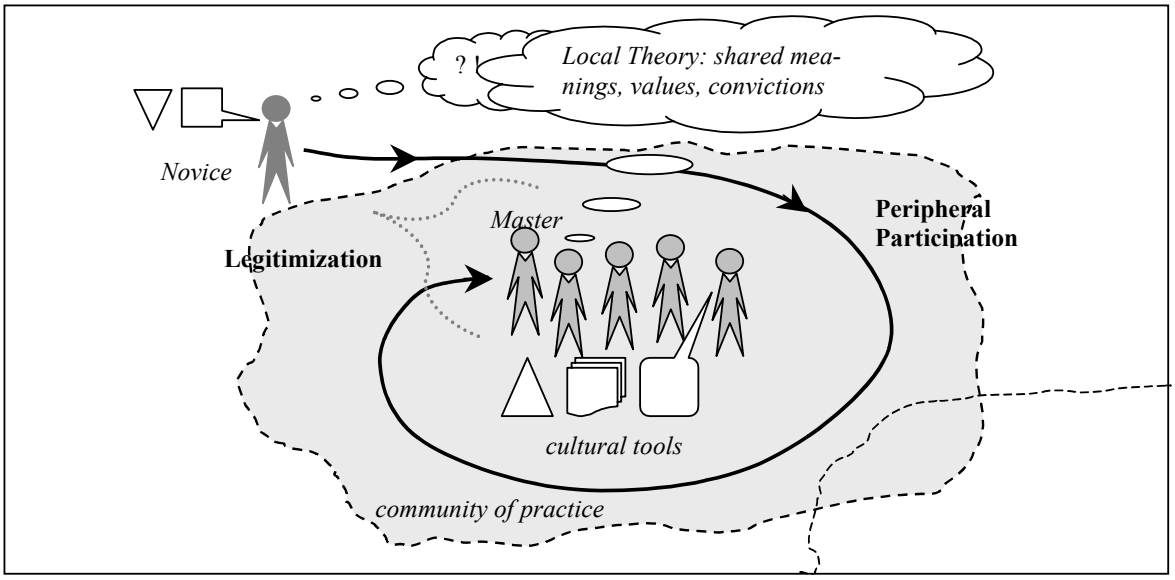
communities of practice. A community of practice is an intrinsic condition for the existence of knowledge...“ (Lave & Wenger 1991: 98), it can be seen as a crystallization of the analytical construction of an activity system.[4]

The process of learning as legitimate peripheral participation within a community of practice can be described as follows (Lave & Wenger 1991: 34 ff.):

A novice as the learning subject joins an existing community of practice. Apart from the formal legitimization by the ‘master’ of the community or any higher authority, the community in terms of its old-timers legitimates the novice de facto, which allows the access of the novice to the social life and activity of the community. If legitimated the novice gets the chance to participate in the community. The participation starts on the periphery: The novice is given tasks to carry out which provide him or her with some basic knowledge of the community’s activity and do not require deeper specific knowledge. Peripheral participation does not mean the position from which the novice contributes to the social life of the community but that he is not yet in full responsibility for his activities. This status reserves some capacity for reflection and questioning of existing activities. The master of the community looks after the novice, and he is mainly in charge of the access of the novice to activities, objects, instruments and rules within the community. Apart from that the master may also guide the novice on what actions he should carry out. Learning, however, is the main activity of the novice and is necessarily under his own responsibility. He may use his access and the guidance of the master to figure out how things work, to observe, to try, to reflect, to ask, to discuss, etc. Therefore, all members of the community are involved in the development process of the novice. Furthermore, there exists no fixed sequence or plan of apprenticeship; it strongly depends on actual requirements of the community and of the knowledge the novice already has gained. The learning actions can of course be supported by instructions through the master. Although the novice participates in a given context and develops knowledge with the help of the members of the community, his expertise on how to carry out actions will differ from the way the other members perform their tasks, since practical knowledge will be applied individually within tasks given (Neuweg, 1999).

From the view of the community, the novice can be seen as an intervention in an existing system. The novice, as far as he is legitimated, questions existing activities from an outside view through the way he asks or carries out actions. This questioning finally challenges the ‘local theory’. It may offer chances to reflect on existing practice and possible change of it. This accommodation process (Baitsch, 1996) leads to an active reproduction of the community. However, the active reproduction will also be overlapped by passive reproduction: in a long-term process aged members of the community will be replaced be novices who become more and more experienced.

[4] The objectives of the members of the community of practice are not identical. Additionally it can be assumed, that subjects are members of different communities at the same time (Allport, 1972).



Picture 1: Initial Situation of Legitimate Peripheral Participation

Legitimate Peripheral Participation does not begin with the appropriate use of pedagogic methods including the planning of its didactic. The methods emerge due to actual and spontaneous requirements. Practice of learning within a community changes perspectives rapidly. Since the system is dynamic and the novice is only the last person to have joined the system, others, however less peripheral, are also learning, supported by master or old-timers. Therefore the subject and object relations change continuously. This also influences the dynamic development of the whole community. Additionally, a member of a community (either novice or old-timer) is influenced in her 'local theory' through novel thoughts, which also influence his personal background and therefore his acting and thinking in general. The novice entering a community of practice is confronted with an existing social system that becomes visible in a specific language with specific use of tools and instruments. Thus a strong focus on the communicative aspect will be one of the first steps in peripheral participation (Stetsenko, 1999:239). This includes the understanding of artificial means and their historical connotation for the community.

Although the social system of the community represents a new and complex context for the novice that he has to grow into, it should be taken into account that the novice is normally not a total newcomer in social situations. He also brings experiences and convictions with him. This personal background is subject to mutual negotiations that lead to changed views on both sides. Therefore, integrating novices without changes is not realistic. In many cases of business communities newcomers basically know the activities carried out within the activity system, because they studied the field required or performed it within another community. Then, learning practical knowledge starts from a different level: Novices know how actions of the type required are generally carried out – they bear in mind a context of contents. However, their general knowledge will only be of practical use if it can be contextualized.

The analytical structure of legitimate peripheral participation represents a general theory on how learning is realized. Therefore these principles may also be found in structures that beforehand do not embody the principles of a community of practice with single novices starting to participate in an existing community. The analytical structure can also be applied in

cases where a known subject introduces a novel idea in a community where a number of subjects (e.g. as novices of a working network) are confronted with an innovation or grow into new topics. Hence, basic principles of L.P.P. take place in any kind of community where subjects grow into new contexts. However, bearing in mind a complex organization with various communities, processes of learning and acting start from different levels and knowledge contexts. These activities overlap and influence each other and therefore change takes place on different levels at the same time, a fact that goes beyond the original theory and shall be considered further.

Characterization of the framework for learning within organizational practice

The model of situated learning describes the activity of subjects within a social system, called a community of practice. It is, however, not clearly defined where the boundaries of a community of practice are and how they are situated in a complex and comprehensive working organization. Considering work in such an organization, practical knowledge of communication and cooperation beyond the boundaries of single communities essentially define the efficiency of work. Therefore, a suggestion will be made about the structure of a set of communities within an organization. Furthermore, as mentioned in the chapter before, practice shows that a number of different constellations in terms of growing into a new context may occur, which are different from the analytic model of L.P.P.. Mergers of organizations are exemplary cases of complex change processes which affect the new definition and identity of an ensemble of communities. Thus, situations will be considered, that are likely to appear in organizational change processes, initialized through mergers:

- Novices who enter a working team are often not really newcomers without previous training. In general they come from other social systems, and bring their experience of its operation. This fact can be either positive in terms of potential for optimization or negative in terms of different convictions on how things work and should work.

- For successful work in a community not only knowledge of manual tasks is important but also knowledge of how to carry out administrative and organizational actions, since these tasks are also a type of practicing and very specific in each different context. In fact, there are hardly any actions to be performed within a community without communication and paper work.

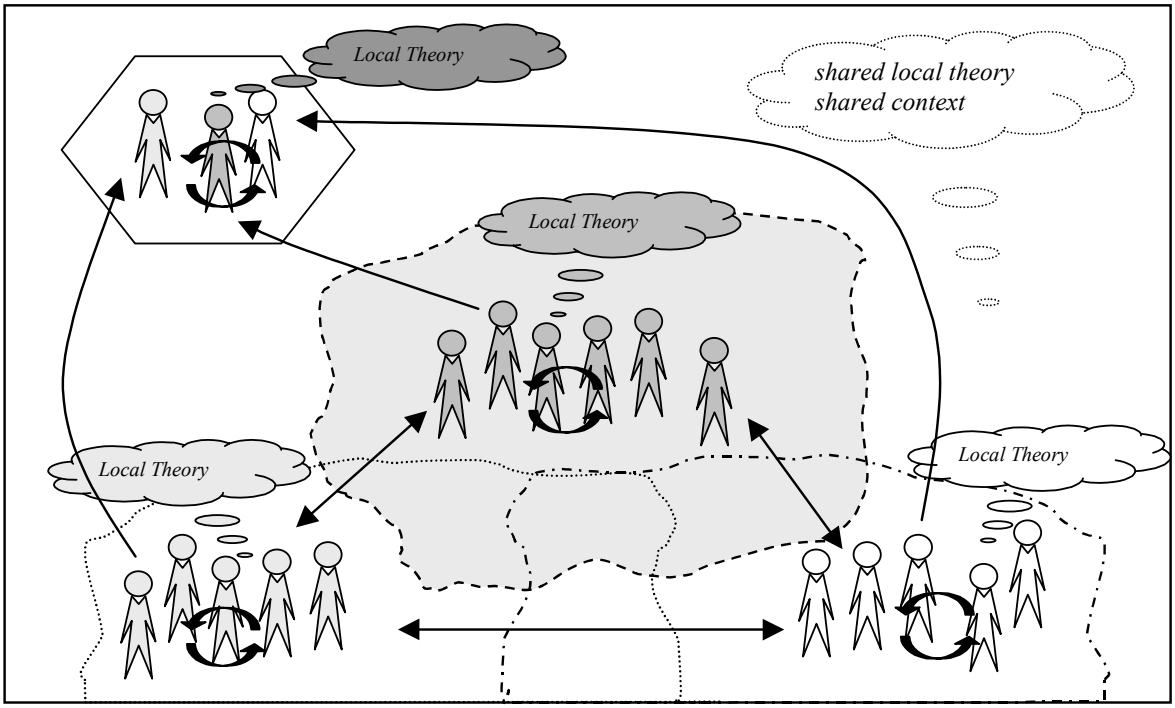
- The way a novice develops manual knowledge depends very much on his background, which can be described as his context on methodology. The way a newcomer develops administrative and communicative knowledge depends on his access to the social situation.

- If newcomers arrive from similar businesses they normally have a general knowledge of the activities to be carried out in the community and a specific background knowledge of the way they used to carry out comparable activities in a different social system.

- Negative emotional effects caused by abandon well functioning procedures often inhibit the integration process.

Applying the basic principles of a community of practice to organizations we arrive at the following position: Within a business organization a community of practice is considered as a permanent or temporary working team dealing with activities or interests that are in meaningful relations to each other and which can be integrated to a whole[5]. Therefore, within a work organization, communities of practice are overlapping units who hold their distinct shared understanding as 'theory in use' or 'local theory' of their activities. Members of these communities, however, may additionally contribute in different fields (e.g. leadership teams or project groups for the implementation of new products). They may form new temporary communities with a local theory of their own, however strongly influenced by the original ones. Communication and cooperation take place within each single community and between communities. Since all communities belong to the same organizational context they also have a shared local theory on how the whole organization works (comp. picture 2). For a well-functioning organization the interaction between communities is crucial in terms of communicative processes, not the single community.

The complexity of this structure increases significantly if we consider mutual and interacting activities. Moreover, change within one community, e.g. through novices, indicates changes in relation to other communities as well. Mergers as complex processes of change in different communities at the same time require redefined cooperation and communication relations between communities. Hence old-timers and masters in the communities have to adapt to changed inter-community requirements.



Picture 2: Interrelations in and between communities in a complex practice

The following chapter will present the case study with the training program already realized in the merged companies of chemical industry. The theory of legitimate peripheral participa-

[5] Hence, a community is not necessarily located at the same place and has not to work continuously on joint activities.

tion is adapted to the requirements of change and development within a complex organization after a merger, especially, how individuals who come from different backgrounds can develop shared practical knowledge and theoretical knowledge within the new working context.

Developing a qualification program based on situated learning

The situation within the merged company is presented as follows. At the functions of planning, logistics and production the fusion appeared as a process similar to organizational development, no fundamental restructurization took place. Change was mainly a question of integrating new products into existing areas and through closures of supposedly redundant areas. Hence, structures were adapted to changed requirements and new tools such as automated equipment and procedures had to be implemented. Operational teams were supplemented by additional workers or managers from the other corporation or from outside. Workers had quite low understanding for changed procedures and new products that required new activities and process orders. The former processes were perceived to have worked successfully and workers identified with them, hence from their view there was no sensible reason for change.

Interviews with managers and workers of the merged companies[6] showed that the employees only know how to perform their own recurring actions: *„..they're unable to communicate beyond their own team."; „Most of the staff do not know what's going on before and after their own process."*. Theoretical knowledge about the requirements of new products and practical knowledge on how to perform changed activities was transmitted very rarely, only through instructions on activities to be carried out. Since workers did not know adjacent processes, they did not understand the sense of coordination procedures such as the matching of process schedules: *„... the understanding for the work of the others is very poor."; „..even supervisors and managers don't have an overview of the whole process."*. Additionally there were many complaints about other functions of the value chain and very limited understanding of changed procedures. To some extend teams were competing over the 'right' processes and the 'right' products.

Starting from the basic perspective, that learning always takes place as legitimate peripheral participation, the task could not be to design a more or less traditional training concept that follows the theory of situated learning. The question is, how the 'growing into the work context' can be supported in a way that practical knowledge will be learned, which is suitable to cope with requirements on the operational level (such as communication and cooperation[7] between communities with complementary tasks) and to enable further development of the whole organization. An additional requirement is the diffusion[8] of the effects of the training program throughout entire departments of production, planning and logistics.

[6] 20 Interviews were carried out two years after the merger. Workers and managers were interviewed about their appreciation of communication, cooperation and knowledge within the working teams after the merger. The investigation was carried out as a qualitative expert interview.

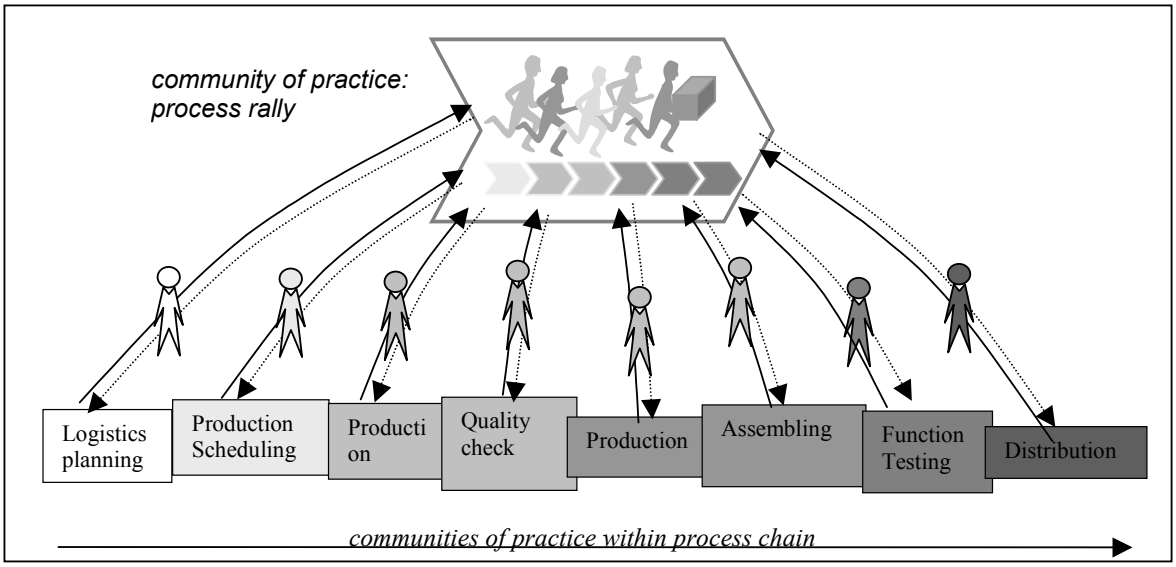
[7] Communication is seen as a sort of cooperation and on the other hand any form of cooperation requires communication (comp. Watzlawick, et al. 1980). Therefore the terminology communication is used for introduction and coordination activities, cooperation is used for activities based on existing relations, including actions of communication.

[8] Diffusion according to Rogers is a "…process by which an innovation is communicated through certain channels over time among the members of a social system...." (Rogers, 1985: 5).

The learning program was to take place within the working context, it was to be a lively experience for participants and had to cope with limited personnel and time resources. Furthermore the whole value chain form planning up to distribution had to be integrated. Moreover, as employees demanded, the awareness of the product and its final destination was to be increased significantly. Reflecting on the initial problem analysis, major deficits did not lie in the actual practical knowledge of the concrete manual actions workers have to carry out, but in the knowledge of any other activities related to the production process[9]. Taking into account theoretical aspects of knowledge, the major objective of the training concept was to generate practical knowledge in and for daily practice. Therefore a combination of 'real' activities and simulation was considered to be an adequate way to meet requirements. In order to provide a social system within the context of the organization but away from daily business, a temporary community was considered as a promising solution. The comprehensive training concept developed on these requirements is called the 'Process-Rally'.

Within this temporary community, a set of players produce an original pharmaceutical product in two days[10]. Participants start from the planning activities such as determining the demand and defining production lots, then carry out preparatory tasks as well as production activities. Within the Rally, players also have to analyze ingredients as a quality check, then to assemble the components, pack and label the product and finally check the function at the quality assurance. If the product is allowed to be sold, the team has to go through the distribution activities until it can be delivered to the customer. All activities take place on the original shop floors, in laboratories and offices. Most actions are identical with daily practice. Some actions are simplified due to complexity which is difficult to understand or to automated processes that only can be observed or have a black-box character, such as logistic planning with a computer system. These actions are carried out manually for didactic reasons. On the one hand the sequence of activities in and between teams is fixed due to technological and product constraints, on the other hand a number of actions are subject to self-organization, based on the background of each participant and community. This self-organization, however, often diverges from explicit instructions. The players' group constitutes a temporary community of practice for two days. It usually comprises 10 people originally working within different communities of the process chain. It is recognized that a person from each process participates in the rally team. These representatives may operate as experts when the activities of 'their' process have to be worked out. The participants' 'expert-novice' relation changes permanently, since the expert is normally only an expert for one process (and similar activities).

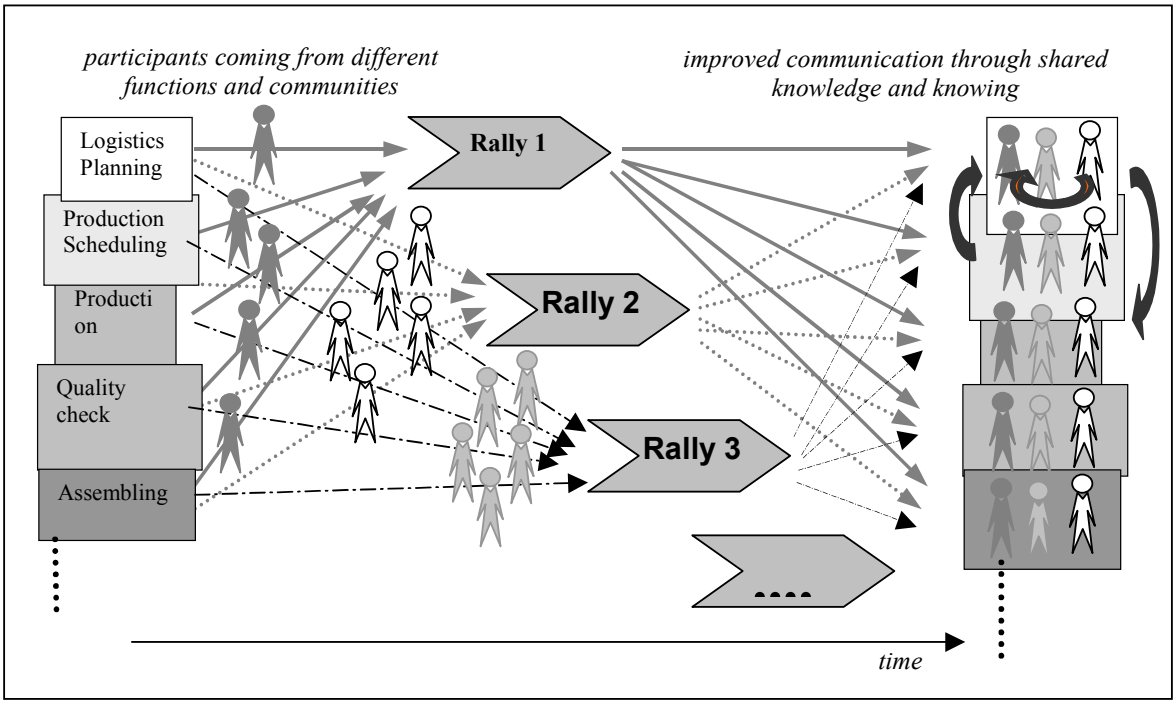
[9] For details on problems compare chapter 1.
[10] Standard throughput time is around 4 weeks, security buffers included. For the process rally a product has been chosen that can be manufactured within two days.



Picture 3: Structure of the training concept process rally

The players' group is guided by a game leader and at each function a process advisor assists the group on request or, if necessary from his point of view. The group itself chooses an administrator who has to take necessary documents with him and a controller who is responsible for money. At the end of the game a supposed customer (normally a representative of the board of directors) somewhat ceremonially buys the product from the group. Combined with that action is a feedback discussion with the playing group on their impressions of the Rally. To provide controlling knowledge the players' group obtains a budget of money at the beginning. Each activity costs money and has to be paid for. At the end of the rally when the product is sold, the group has to calculate their profit. Therefore general controlling expressions which workers normally have heard about but do not know the meaning of are put into relation of their context of application. Additionally the group has to answer questions within or after the processes. To learn the answers the players need to discuss with the workers of the departments they are located. The questions are intended to reflect on the activities, the way they are carried out and their meaning for the whole production system. Especially if activities are simulated through manual tasks, questions provide a link to the way they are carried out in the original process. For correct answers players gain 'bonus-points' which can be converted into money to achieve an additional profit.

The rally is open for any employee and takes place every 4 to 6 weeks. Therefore it can be seen as a platform for learning. Effects of increased knowledge are expected to occur when the participants return to their permanent community of practice. However, appreciable effects can only be observed, after a number of rallies have taken place and rally participants share their experiences or if they cooperate with increased practical knowledge (resulting from an increased knowledge base).



Picture 4: The complete concept of performance of the Process Rally

Experiences and conclusions

It makes sense to distinguish between the experiences made within the temporary community process rally and the experiences of the permanent communities of the "real" process chain after participants have returned to their teams. Experiences are a set of exposures from different rally performances gained through observation[11] and interviews[12]. The evaluation process, however, is still under way.

The process rally represents a social system of its own; therefore, players at first concentrate on how to play the game. Since the process rally is, despite rules and instruments given, open for self-organization the performance depends very much on the players – they form their individual community and develop their own local theory which necessarily depends on participants' backgrounds. Especially procedures intended such as the shift of an expert-novice relation depend very much on individual knowledge on explanatory action or teaching activities. In most playing groups the number of people reflecting on the rally activities in the light of their own daily activities is very high – it becomes visible in permanent further questions. Furthermore, the guided use of instruments such as language or procedures enable the participants to understand them and to learn how to use them in an appropriate way. Together with the reflection on the activities the theory in use may have changed. Statements

[11] Each rally performance is systematically observed with help of a observation manual. Especially aspects such as problem solving, work organization, group interaction, cooperation, communication and coordination are observed. Results are compared within each performance and between the rallies.

[12] Interviews are held with a certain distance to the rally performance. Especially practical relevance of knowledge acquired during the rally performance and diffusion effects of knowledge after a certain amount of rallies performed are subject to semi structured interviews of former participants and managers.

such as: *"...I always did this action without knowing what's behind, but now I have understood how it works together"* underline this assumption. Most of the participants already had background knowledge about the organization. For these players a strong focus is on individual interests: Once the players can imagine how activities are carried out they have further questions in relation to their own work. Therefore the rally is a cause to reflect on action. Novices within the organization, however, are more interested in a broad overview on how activities are performed in practice, since they lack context specific experience within that organization. People from the other merged corporation tend to compare and sometimes to assess the procedures. The guidance of participants in certain actions is an important way to help players perform tasks[13] that they have never done before or that require to contact people outside the community. Especially complex rule-based activities (e.g. through product constraints) need guidance, which can often not be provided by the internal expert but requires the help of the process advisor (comparable to a master function). Since the overall feedback from participants is very positive people who once took part now participate in preparing the rally or as process advisors. Thus the rally as social system reproduces itself.

Communicative and cooperative effects in and between teams are assumed to depend strongly on the number of people participating in the process rally[14]. Yet the critical point to evaluate the rally's success is its effects in daily practice. The rally participants can only profit from their new knowledge, gained within the two days of performance, if it shows effects in their operative working context, e.g. through changed views, new ideas, background knowledge. However, bringing new ideas into the operational team is an intervention which may also cause conflicts. The person coming from the rally at first stands alone: *"...at present the three participants of the solid production stand quite isolated despite their enthusiasm..."* Hence in teams with a number of participants discussions of change have already started and even between teams which are in the habit of frequent cooperation: *"...where a significant number of team members took part they built up each other in terms of new ideas"*. The ideas for innovations generated in the process rally team have to be worked out and discussed within the permanent community of practice. They depend on the acceptance of the colleagues and managers involved. However, the pressure for change increases the more knowledge workers gained in the rally experience. Therefore comparable rally experiences probably cause totally different effects in the single communities.

From an organizational perspective it should be taken into account that each community embodies its own local theory based on the shared background understandings of its subjects (compare picture 2). Additionally, a common understanding of the whole organization exists within an organization. After mergers, there obviously exist two different competing local theories, however only one can be seen as the dominating one. Newcomers from outside the organization[15], however, do not have these understandings concerning the social system organization with its communities. Considering the platform process rally as a temporary community of practice it (tacitly) generates its own local theory, since all players are novices to the social system rally but not to the activities to be carried out[16]. Back in their operational

[13] compare with the principle of the Zone of Proximal Development (Stetsenko, 1999)
[14] Change within and between communities is additionally caused through permanent reproduction processes in the organization.
[15] The members of one of the merged organizations are also considered as newcomers, since it is very likely that one organization can be seen as the dominating one after merger. This dominance may differ between different business units and can not be seen throughout a whole corporation.
[16] compare the role of the temporary expert described in chapter 6

teams, they bring new views and ideas with them, obtained through a new understanding. Hence they influence shared understanding and the way of cooperation. The way of influence can be either explicit or tacit. If explicit, influence may be broader and faster but it is a question of legitimization by the team. The degree of influence depends very much on the diffusion of knowledge obtained through the process rally throughout the organization: if very few people support the idea it is likely that standard training effects occur such as assimilation or rejection of new ideas. The operational communities are, however, permanently influenced through the comprehensive program process rally: Each time a team member takes part in the rally, the others are confronted with his rally experiences. Influence also comes from interfaces with adjacent communities where workers also take part in the rally and discuss their experiences. Furthermore starting from the shared experience process rally a common understanding on how the organization works will be developed. This factor can settle conflicts since original local theories are questioned, new aspects are integrated and it is developed further. The workers get the opinion that they can participate in a new reality through personal experience and new relations. Unfortunately, not all of the workers have enough scope to benefit from the rally experience in terms of initiating change.

Phenomena show the complexity of learning effects that overlap and happen simultaneously. However, it should be stressed that practical knowledge which is relevant for organizational practice can only be developed in daily practice: *"Participants don't really learn how to do their daily business, because they know it and show it to the others* [during the rally]*"* Therefore the process rally represents a platform which fosters the development of practical knowledge through action within the practical context, through reflection on action, through activities along the value chain, through providing a social system which includes most of the characteristics of a well functioning community of practice: *"The knowledge what comes before afterwards and in parallel to the own job increases significantly."*. Nevertheless, sustainable effects relevant for daily practicing can only be achieved through interrelated actions between the process rally and the development of practical knowledge within the permanent communities of practice of the process chain. The project intended, from a practical view, to provide solutions for theoretical and practical knowledge problems especially in communication and cooperation activities after the far-reaching change caused by the merger.

The one-and-a-half year experience with the performance of the rally shows a notable dynamic in terms of acceptance of the program by workers and managers and of visible following effects in the operational teams. At the beginning the rally was considered as just another training program. After first rallies participants appreciated the personal experience but there were hardly any effects visible in operational communities. Now the rally is a fixed institution in the corporation which is actively used by the workers and managers as a qualification, information, integration and exchange tool. New workers are asked to take part in the rallies and some departments recommend their cooperation partners from adjacent departments to participate. Furthermore additional improvement and learning projects which are based on participation at the rally are initialized. The original cause to provide a tool to integrate two organizations is released by a much more general intention of developing the organization and the knowledge of its members.

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