

User-centred Knowledge Management: What, Why and How

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Summary

A recent Gartner research report (Rozwell 2009) proposes that the discipline of "Knowledge Management" (KM) has a new emphasis called "socialized KM ... a model that puts users at the centre" (subject, "what"). The author gives also business related reasons for implementing it (objective, "why"). However, it lacks ideas on how to do what it proposes. In this paper we present a solution to this problem: an architecture of a user-centred KM system based on a constructivist understanding of knowledge and on the CoP (Community of Practice) model of social interaction.

1 Introduction

A recent Gartner research report (Rozwell 2009) proposes that the discipline of "Knowledge Management" (KM) has a new emphasis called "socialized knowledge management." The author, Carol Rozwell, claims that many traditional KM initiatives and projects undertaken in the last 20 years failed because they "missed the point that knowledge resides with people and ... is difficult to access and use without collaboration" (Rozwell 2009: 2). As a solution, the report suggests a new socialized model of KM: "a model that puts users at the centre of the process;" a model in which knowledge is viewed as "embedded in the networks and relationships of people." This Gartner model of socialized KM consists of a list of requirements that a KM initiative or project should realize in order to produce a KM solution in which networked users are at the centre of the KM process; unfortunately it does not say anything about the design and implementation of such a KM system. In summary, the Gartner model clarifies the challenge or expected outcome ("what") and gives business related reasons for pursuing it (objective, "why") but leaves open the crucial question of the means of producing that outcome (design principles, approaches, guidelines, elements, architecture, functions, roles, processes, interactions). So how, by which means, can we reach the end of obtaining a KM system (in our terminology always a unity of methods and tools) that has the user at its centre, a user-centred KM system?

2 Social Interaction for KM

A model of social interaction that is useful for solving KM problems with a user-centred approach and that complies with our understanding of knowledge as the logic of experience (Bettoni & Schneider 2003) can be found in a social theory of learning, that has developed the concepts of "legitimate peripheral participation" (Lave & Wenger 1991) and "Community of Practice" (Wenger 1998), where learning is considered as a situated activity and this situated learning is a learning that *takes*

place in the same context as that in which it is applied. In fact this is exactly what we need to achieve: that learning about a domain of work (business domain) happens in the same domain as that in which KM is applied and that this domain of work is also the context in which this learning has to be applied.

“Legitimate and peripheral” means that unqualified people are also accepted as members of the community of practice (CoP), which we understand as a group of people *“who share a concern or a passion for something they do and learn how to do it better as they interact regularly”* (Wenger 2006: 1). In these times where knowledge changes so rapidly, we think that everyone is “unqualified” in a certain sense: we are always in some ways at the periphery of a practice and at the same time at the centre, too. From one point of view and for some aspects of the practice we are at the centre, but from another point of view and for other aspects of the same practice we are at the periphery. Hence it is important to accept members who enter at the periphery and also to promote or facilitate their evolution from the periphery to the centre.

Conceiving, launching and cultivating community-based KM systems is different from the traditional design and development work done for knowledge management systems that use traditional organizational structures (Bettoni 2009). Communities need to be approached in the same way as living things: working with a community of practice actively and systematically is more like cultivating a plant than like building a machine. Machines or other artificial systems are built in their final state by assembling separate parts; a plant, on the contrary, does its own growing from a seed and evolves. As Wenger, McDermott & Snyder remark (2002: 12–13): *“You cannot pull the stem, leaves or petals to make a plant grow faster or taller. However ... you can till the soil ... supply water, secure the right amount of sun exposure.”* Similarly, for communities of practice you have to develop an environment in which they can prosper and *“bring out the community’s own internal direction, character and energy”* (Wenger, McDermott & Snyder 2002: 51). Thus, a CoP, like other organisms, cannot be really “developed”: working with a CoP is rather a facilitation process where an appropriate environment is created in which it can emerge, grow and flourish. For this reason we will use consistently in the following the term “cultivation” where traditionally one would speak of “development.”

3 Design for Meaning

The new and most challenging aspect of our user-centred KM concept is the way in which we design the connection between the users of the KM system: in fact our idea is to connect them in a community of practice (CoP) with the shared task of stewarding the CoP’s knowledge in a participative way (Bettoni & Borter 2007). This raises the new research question of how to achieve and maintain a lasting engagement in a community of practice with such a task. One of the most common approaches to engagement in organizations is to look for incentives, for motivation (Osterloh & Frey 2002). This may be a useful perspective in many organisational development initiatives, but in the case of community-based knowledge initiatives we claim that is not enough: the incentives view of engagement should be extended by a complementary and at least equally important consideration of the issue of “meaning” (in the sense of: the experience that what we did, are doing or plan to do “makes sense” to us).

In fact, our knowledge is, of course, strongly related to motivation but probably much more intimately connected and directly influenced by our experience of meaning.

More specifically, our claim is that if we want to get enough engagement for stewarding knowledge in a community of practice, then we need to:

- * Better understand the human experience of meaning (in KM tasks)
- * Extend our community design with a design for meaning (in KM tasks).

A basic aspect of our engagement is that we strive to experience our actions, our practice, as meaningful. We do not simply want to get something done (a report written, an event organized, a request answered, etc.): what counts in what we do is always more than the result, it is the experience of meaning connected with that result. In the end, the meaning we produce matters even more than the product or service we deliver. But how do we operate to produce these meanings and to put them in relation to the histories of meanings of which they are part? In his investigation of this issue Wenger (1998: 53) introduces the notion of negotiation of meaning as “the process by which we experience the world and our engagement in it as meaningful.” This process is conceived as the combination of two sub-processes:

- * A process embodied in human operators, called “participation”
- * A process embodied in an artificial operand (artefact), called “reification”.

The human operators contribute to the negotiation of meaning by means of their histories of interactions in the practices of a community. The artificial operand contributes to the negotiation of meaning by reflecting aspects of the practice of the community (histories of transformations). Thus the negotiation of meaning takes place as a convergence of two histories: that of the human operators and that of the artificial operands. In Wenger’s model, participation is conceived of as:

- a) the social experience of living in the world in terms of membership of social communities;
- b) active involvement in social enterprises.

In the same model, reification is seen as the process of giving form to our understandings, experiences, and practice by producing objects that express them. Writing down a law, producing a tool or even putting a book back in a shelf are examples of this process. Participation and reification are both distinct and complementary. They cannot be considered in isolation; they come as a pair. They form a unity in their duality (Wenger 1998: 62).

According to this model, our experience of meaning is viewed as a duality, as an interplay of participation and reification, with the following implications:

- a) when you understand one, you should also understand the other;
- b) when one is given, you should wonder where the other is;
- c) when you enable one, you should also enable the other;
- d) one comes about through the other, but they cannot replace each other.

4 Knowledge Cooperation

By taking seriously Wenger’s theory and appreciating its potential impact on KM we can now deduce the following main guideline for our design for meaning: if meaning as a constituent of a social theory of learning should be viewed as a duality of participation and reification, then engagement in stewarding knowledge should be implemented as a duality of two corresponding processes: in our case, participation in knowledge and cultivation of knowledge. Put together by connecting them in two

loops with the process of knowledge stewarding (Fig. 1) they build what we call “Knowledge Cooperation” (Bettoni & Borter 2007).

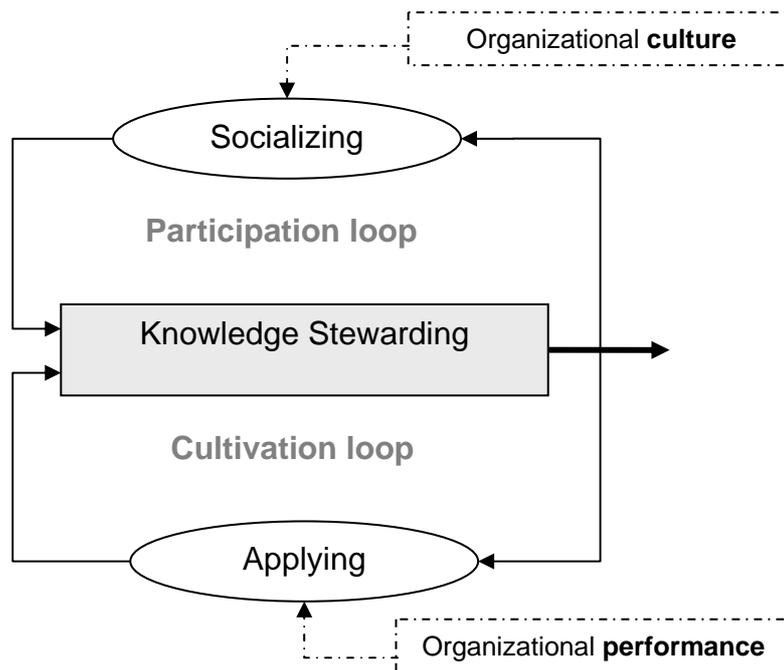


Fig. 1: Circular processes of knowledge cooperation

The lower loop, cultivation of knowledge, is the circular process by which a community collaboratively stewards its knowledge resources (by processes such as acquiring, developing, making transparent, sharing and preserving knowledge) and uses them in daily work. The upper loop, participation in knowledge, is the circular process by which community members build social capital (establish and take care of personal relationships, develop individual and collective identities, etc.) and “invest” this social capital in collaboratively stewarding the knowledge resources of their community. The three processes or groups of knowledge processes connected by means of the two learning loops mentioned are (Fig. 1):

- a) Stewarding knowledge: This group of knowledge processes encompasses processes such as acquiring, developing, making transparent, sharing and preserving knowledge.
- b) Applying knowledge: This group of knowledge processes collects what happens when knowledge resources are used in business processes. The learning loop of “cultivation” is established if employees of the formal organization (teams, departments) also informally participate at the same time in communities of practice (Wenger, McDermott & Snyder 2002: 18ff).
- c) Socializing knowledge: This group of knowledge processes collects what happens in personal and institutional relationships between the people with a common purpose that interact regularly. In this learning loop, relevant dimensions are: trust, meta-knowledge, accessibility, engagement in problem-solving and safety (Cross et al. 2003).

To conceive of and implement participation and cultivation as a duality means that they should take place together, they should both require and enable each other.

There should not be any cultivation without participation or any participation without cultivation. Participation and cultivation should imply each other. Increasing the level of cultivation should not replace an equal amount of participation; on the contrary it should tend to require an increase in participation. Cultivation of knowledge should always rest on participation in knowledge: applying knowledge requires a history of participation as a context for its interpretation. In turn, participation in knowledge should also rest on cultivation because it always involves words, concepts and artifacts that allow it to proceed. Finally, the processes of participation (embodied in people) and cultivation (embodied in artefacts) should not be considered just as a distinction between people (human operators) and explicit knowledge (artificial operands, things). In terms of meaning, people and things cannot be defined independently of each other. On the one hand our sense of ourselves includes the objects of our practice; on the other hand what these objects are depends on the people that shape them through their experiences.

5 Architecture of a User-Centred KM System

The need to explain in project meetings our view of a user-centred solution for a real KM problem led us to develop a systemic assembly view, an architecture that clarifies how the previously mentioned concepts and approaches can be assembled in a practical application (Fig. 2).

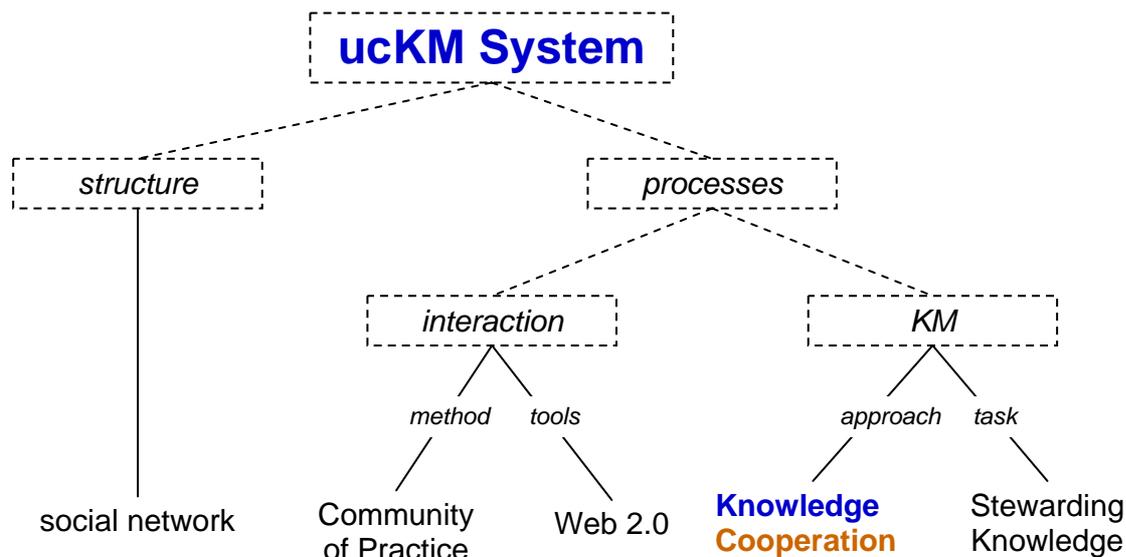


Fig. 2: Architecture of a User-Centred KM System

One aspect of a system to be designed is its structure. The structure is important because it determines in certain ways the future function; and since we wanted a function that is collaborative (cooperative), we selected the “social network” as a structure. A network structure was attractive as a framework for collaboration because of its way of balancing responsibilities: instead of having the classical hierarchical system, which allocates lower responsibilities at lower levels, the network structure would allow equal responsibilities to be allocated to each KM user.

A second aspect to be designed was the dynamics of this system, the processes. One aspect of dynamics is the interaction in the community and another aspect – since the dynamics are to do with organizational knowledge and learning – is the “knowledge management processes.”

As the method of interaction, we selected – consistently with the user-centred approach that we wanted to define – the Community of Practice method, and as regards the tools that enable the community interactions, we decided to select a Web 2.0 approach. As regards the architectural component “knowledge management,” the task that we identified was “to collaboratively steward research knowledge” and we had to select an approach for implementing this task. Based on our defect analysis of KM (Bettoni & Schneiser 2003), we had many reasons to expect that traditional KM would not fit our user-centred approach. So we decided to rely on our new approach to KM, called “Knowledge Cooperation” (see above).

6 The CoRe Experiment

A unique opportunity to practice and test empirically what we have preached in the previous sections appeared in the Fall of 2005 when the author was appointed to lead research at our distance-learning university and the director gave him a set of very ambitious strategic objectives for research and development (R&D). First of all he had to increase the quality of projects – quality of sponsors, quality of outcomes – then the number of grants and the amount of funds also had to increase and, last but not least, the degree of integration between teaching and research had to be improved (Bettoni, Schiller & Bernhard 2008).

How can research be designed, organized and implemented in order to reach these objectives? From conversations and meetings with colleagues, with the researchers, and based on the conceptual background previously presented, we decided to design the organisation of research to focus on an online collaborative knowledge strategy that consisted of three main lines of action: increasing connectedness, community learning and collaboration on knowledge.

How should these collaborative lines of action be implemented? When asking this question, the means of reaching the strategic objectives become ends. What was clear to us was that we needed a collective effort to meet these ambitious objectives and to implement these lines of action. So we became designers of collaborative research and decided to design a community of researchers called CoRe (Bettoni 2007) that would “pull the weight” together by implementing our model of a user-centred KM system.

Moreover, the community would not only be the origin of these lines of action, which would eventually meet the objectives: the objectives themselves would be measured, and the community would act as a kind of “controller” in a feedback loop. To accomplish this function, CoRe would measure the missing degree of attainment of the objectives – which in cybernetics is called the “error” – and by evaluating this error and by self-organizing, accordingly change its own organization and improve the attainment of the objectives.

6.1 Phases of the Experiment

The CoRe project was started by the author in October 2005 as a pilot project with the objective of creating and cultivating a prototype of the CoRe network. This community pilot project was planned to end in December 2008 and run through 4 phases:

- * Phase 1: Planning = defining the project and preparing all community components
- * Phase 2: Resources = community launch, resources development, informal assessment
- * Phase 3: Practicing = community maturation and practice development
- * Phase 4: Outcomes = resources validation, project evaluation and transfer.

Due to a reorganization of the hierarchical structures at our university, which lasted from November 2007 to April 2008, the pilot project was interrupted. CoRe hibernated for one year and awoke again in November 2008. Since then it has been running under the new name of “eDolphin” with a modified approach based on bioteaming (Bettoni, Schiller & Bernhard 2008) and is undergoing some essential modifications to take into consideration not only the lessons learned from the first year but also the new organizational structures.

6.2 Lessons Learned

With the help of an informal check on the CoRe’s health made after one year of the community’s life, our experience with this experiment can be summarized in the following lessons learned.

First of all the CoRe experiment showed that by means of our user-centred KM system implementing a constructivist and socialized approach to KM, it was possible to deliver connectedness, that community learning was happening and that collaboration on knowledge was underway.

Unfortunately there were also two problems concerning the steering of the experiment. The first steering problem originated in the contradiction between network and hierarchy (organizational structure), which in our organization led to a power struggle. The project leader (the author) did not become aware enough of the importance of this power struggle and did not notice that the project was in danger. The second steering problem was that the project leader did not succeed in managing stakeholders’ expectations, especially in understanding top management’s perceptions of the value of this experiment and if this was much lower than the actual value delivered, in educating the boss and in showing that in fact the delivered value was higher than that which he perceived.

Further insights regard the expectations and perceived value from the point of view of the community members. Self-organization and voluntary participation – two essential principles of CoRe – were a big challenge for many community members and after one year they expressed the wish for less autonomy, more mandatory interactions, and more mandatory use of tools. In this regard our analysis identified a set of problems, the most important of which were called “the silent novice,” “prototype deadlock” and “voluntary is not serious”:

“The silent novice:” When members feel that their expertise level is more that of a novice than that of a competent or proficient professional, then participation in discussions can be low if people belong to a linear-active culture (Lewis 2003), such as Germans and Swiss-Germans (our case). Since they highly value “facts and figures,” they are more likely to feel uncomfortable when they cannot provide them.

“Prototype deadlock:” To support one-to-one interactions, we had created a tool for competence analysis, visualization and interaction called the “Yellow Tool” (Bettoni et al. 2007). In the first year our tool was a prototype: it needed users that *jump in*, in order to improve it; CoRe members were instead *leaning back*, waiting for the tool to be improved before using it for their interactions. Using and improving the propotype were both waiting for the other activity to finish and thus neither ever took place: a typical deadlock that prevented people from using this opportunity for interacting, exploring who is who and understanding who knows what.

“Voluntary is not serious.” Projects are wonderful opportunities for networking and engaging in collaborative activities that in turn can promote a strong sense of belonging. In the first year, members of CoRe started a lot of research projects but still did that on an individual basis without trying to connect online with other CoRe members by means of CoRe Square and thus failing to include them in their perspective. One cause for this disconnected approach could have come from our Central European education system in which work and voluntary activities are strictly separated: the first considered “serious but not fun;” the second “fun but not serious.” As a consequence, the unusual idea of “volunteering for work” – as in CoRe – was intuitively and unawaresly seen as not serious or even impossible.

Finally we realized that for leading the conversational type of collaboration that characterizes Knowledge Cooperation we needed a new kind of competence, which is a kind of “facilitative leadership”: anyone who – in the Community of Research – acts as a leader must be able to lead *negotiations of meaning*, a new kind of group interaction that produces consensus in knowledge and consensus in ways of dealing with knowledge.

In summary, these results show a clear challenge in implementing a user-centred KM based on Knowledge Cooperation: that of balancing self-governance, self-organization and voluntary participation on one side and stronger guidance, obligatory interactions and mandatory use of tools (CoRe Square) on the other side. Thus we saw a clear emergence of a tension between two opposing tendencies: autonomy and guidance. We in the project team were convinced that CoRe had made important steps forward and were confident that we would have been able to cope with the above-mentioned tension and challenge.

7 Conclusion

In this paper we have shown a set of interrelated means for implementing a user-centred KM:

- * the concept of a “design for meaning” as a way for conceiving the connection between the KM users and the KM system;
- * the model of “Knowledge Cooperation” as a way of blending the Community of Practice model of social interaction with our understanding of knowledge as the logic of experience;
- * the architecture of a user-centred KM system assembling the previously mentioned concepts and approaches;
- * insights from evaluating the results of an experiment in which we have practiced what we preach by implementing our user-centred KM approach in a community of researchers called CoRe.

The CoRe experiment confirmed that by means of our user-centred KM solution implementing a constructivist and socialized approach to KM, it is possible to deliver connectedness, to support community learning and to connect users of the KM system with the shared task of stewarding the users’ knowledge in a participative way. Hence its difficulties should not be interpreted as a weakness in the underlying constructivist and socialized perspective; their causes are rather to be found in the steering of the project and point to a fundamental issue and a related question. The issue regards economies in general: we need to understand better how a *knowledge econ-*

omy differs from our traditional capitalist *work economy*. The question regarding implications of this issue at the level of organizational development is: How can a hierarchical organization focused on *performing work* be changed to also integrate a network structure focused on *stewarding knowledge*?

As mentioned in the Gartner report, KM systems failed when they missed the point that knowledge resides in people: in other words, when they put technology at the centre of the KM system and disregarded the essential role of people, both as individuals and as social beings. Our results show that this problem does not reside in the systemic approach as such, but in a technology-centred approach that causes a wrong selection of the elements and relationships that constitute the KM system. Our concept of a user-centred KM and the means for implementing it described in this paper confirm the usefulness of a radical constructivist and social oriented approach; in our experiment the KM system was designed in an open way that allowed us to both identify and to take seriously the concerns and fears of the individuals as well as obstacles in developing connectedness and interactions among them. However, these processes need time (for growing, for the analysis, for taking measures) and when this need is not clarified, communicated and discussed with all stakeholders from the beginning (for instance by means of change management methods), then false expectations can tacitly arise and lead too soon to disappointment and inappropriate reactions.

Hence the most urgent improvement should address this issue of clarifying, communicating and discussing the time scale of when what result can be achieved, and accordingly negotiate shared expectations. This negotiation could generate resistance and opposition but would at the same time also lead to an improvement in the implementation of knowledge cooperation thanks to a better understanding of the needs and fears of participants as they arise and evolve during the implementation of the KM solution. This improved understanding would especially occur in relation to the adoption of new communication technologies supporting the interactions and – more importantly - of new ways of working and leading (Libert 2008), which are needed for collaboratively stewarding knowledge in an online community.

In a user-centred KM, the user who wishes to be successful needs to create a personal social network and for doing this he should stop trying to subjugate his target partner by means of power, as in a traditional hierarchy of a traditional company. Instead he should begin to become attractive by means such as helpfulness, empathy and an appreciative habit of mind. It is in this principle of love that we see the future of knowledge management and of the knowledge economy.

Bibliography

Bettoni, M. (2009) Weak ties cooperation with Web 2.0. KAPPAEMME, 1-09, 26-31, <http://www.jekpot.com/kappaemme/>

Bettoni, M. (2007) CoRe Square - A Community-Oriented Research Networking Space. KAPPAEMME, 2-07, 20-25, <http://www.jekpot.com/kappaemme/>

Bettoni, M. & Borter, F. (2007) Knowledge Cooperation – Requisiti per un approccio partecipativo alla gestione della conoscenza, KAPPAEMME, 1-07, 10-11, <http://www.jekpot.com/kappaemme/>

- Bettoni M., Bernhard W., Borter F. & Dönnges, G. (2007) The yellow tool – Making yellow pages more social and visible. In: Martin B. & Remenyi D. (eds.) Proceedings of the 8th European conference on knowledge management (ECKM 2007) at Consorci Escola Industrial de Barcelona (CEIB) in Barcelona, Spain, 6–7 September 2007. Academic Publishing, Reading MA: 118–124.
- Bettoni M., Schiller G. & Bernhard W. (2008) Weak ties cooperation in the CoRe knowledge network. In Harorimana D. & Watkins D. (eds.) Proceedings of the 9th European conference on knowledge management at Southampton Solent University, UK, 4–5 September 2008. Academic Publishing, Reading: 59–66.
- Bettoni, M. & Schneider, S. (2003) „The Essence of Knowledge Management: A Constructivist Approach“. In: Camp, O., Felipe, J. Hammoudi, S. & Piattini, M. (eds.) Proc. of the Fifth Intern. Conf. on Enterprise Information Systems, ICEIS 2003, Angers, France, April 22-26, 2003, Vol. 2, 191-196.
- Cross R., Parker A., Prusak L. & Borgatti S. P. (2003) Knowing what we know. Supporting knowledge creation and sharing in social networks. In: Cross R., Parker A. & Sasson L. (eds.) Networks in the knowledge economy. Oxford University Press, Oxford.
- Lave J. & Wenger E. (1991) Situated learning. Legitimate peripheral participation. Cambridge University Press, Cambridge.
- Lewis R. D. (2003) The cultural imperative: Global trends in the 21st century. Intercultural Press, Yarmouth ME.
- Libert B. (2008) Social media change corporate culture. Retrieved 14 October 2008 from <http://www.mzinga.com/en/Community/Blogs/Barry-Libert/>
- Osterloh, M. & Frey, B. (2002). Successful Management by Motivation. Balancing Intrinsic and Extrinsic Incentives. Springer, Berlin/Heidelberg/New York.
- Rozwell G. (2009) Socialization of knowledge management drives greater reuse. Gartner Research, Report ID Number: G00167449.
- Wenger E. (1998) Communities of practice. Learning, meaning and identity. Cambridge University Press, Cambridge.
- Wenger E. (2006) Communities of practice: A brief introduction. Retrieved on 16 March 2010 from <http://www.ewenger.com/theory/index.htm>
- Wenger E., McDermott R. & Snyder W. (2002) Cultivating communities of practice: A guide to managing knowledge. Harvard Business School Press, Boston MA.