The system learning. Rethinking structures, role and functions of the virtual communities of knowledge and learning

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ABSTRACT. The technological changes, that have been taking place long since, have not only modified the learning forms of the complex organizations, even within them, but in the large, all forms of social aggregation, generating brand new phenomenologies. In this context of technological change, the virtual communities get a foothold as new forms of organization of processes of the collective learning and shared knowledge, way of working together, doing business, to know/learn. In order to develop such topic (even synthetically), it will be useful to start from the beginning anyway, that is following the logic of acting on the web.

Particurarly, the virtual communities (or on-line), constitute a specific and important area of online oriented interaction involving not only general interpersonal aspects but can be differently classified according to functions, logics and practices of learning, professionalism, organization, governance and business, knowledge learning and development.

KEYWORDS: ITC, CMC, Communities on line, Knowledge, Learning

Introduction

The technological changes, that have been taking place long since, have not only modified the learning forms of the complex organizations, even within them, but in the large, all forms of social aggregation, generating brand new phenomenologies.

In order to understand these changes, we need first of all to understand the gene mutation of the new ICT: from being tools for data elaboration and transmission, the new technologies have turned into communication tools, with a potential that has not been completely investigated yet.

The main factors characterizing this change are two: the first one has to do with the redefinition of the structures of the flows of communication among people, the second one has to do with the passage from the codified data channelling to multimedia. (Malizia, 2006)

As far as the first element is concerned, it is worth underlining as the mass production has accustomed us to distinguish between interpersonal communication tools (telephone) and traditional mass communication tools (television and radio). The web makes this distinction obsolete, through a synthesis synergistically integrating forms of communication *one to one* and functions of communication *one to many*. Moreover, it guarantees communication among people and screens the standardized information according to parameters and categories that the consumer has specified.

The second factor, involving multimedia, has the improvement of contexts as its main effect. When the information technologies have not been considered any longer as embellishment of the big structures, that could afford to economically sustain the complex cycle of knowledge coding and re-contextualization, multimedia has given the possibility to transmit and produce contexts on the cheap. The new tools of web communication and cooperation allow the consumers to exchange different messages (text, sounds and images), creating new cooperation spaces. The new technologies notably reduce the coordination and communication costs, because they limit the use of procedures for the knowledge coding.

In this context of technological change, the virtual communities get a foothold as new forms of organization of processes of the collective learning and shared knowledge, way of working together, doing business, to know/learn. In order to develop such topic (even synthetically), it will be useful to start from the beginning anyway, that is following the logic of acting on the web.

The Web as social area

The net, or better, the set of social relations and the relevant forms of communication/interaction is a strengthened and rather diffused phenomenon, that is lived and represented both in an apocalyptic and totally uncritical way, and, more realistically as a communicative area, a particular context where the space-time

dislocation of signs, their deterritorialization, is a matter of lightness, virtuality, speed of reproduction and transmission technologies. The mix of these factors generates the web: a virtual space of global communication and information flows. Internet is crossing a limit, the point of discontinuity of communication tout court, and here of communication-world. Its DNA is a mutation towards a new communication form. A technological macro infrastructure without a solution of continuity, interactive and horizontal communication, digital code, multimedia languages, virtual space, personalised access and personalisation of the "show schedules", are the new molecules, the new crossing-over of the nucleic acid generating a mutation of the communication form.

In fact, more than a means of communication, the web seems to be a real "space", released from concrete relations, absolutely despatialized (more than any other medium), where the social becomes virtual; a sort of autonomous reality where flows of communication "as such" (both ephemeral and steady), without necessarily having a univocal connection communication/ comprehension, without interaction, nor even "almost".

It is the place where the social side upsets itself into a series of "weak" connections (the term itself is interesting), a pseudo-reproduction of sociality (virtual communities, *chat-lines*), with levels of social presence and media richness that are inversely proportional and often degenerative, with a logic of set action, virtually built (Thompson, 1998).

Certainly, Internet is deeply different from the traditional media, allowing an accelerated interactivity (but without a real interaction), linking more media, a free and personalised connection/ disconnection that emphasises a specific (home page, discussion groups, etc.) or generalized (surfing), be online, often with a low communication sketch both as transmission and, above all, as relation in a sort of "absolute sense of freedom" whose destiny is to be more and more misleading than real: we can think of that kind of net system, making the surfer less and less Homeric and more and more route-type, often commercial and not so free.

Whatever the profile, communication on the web (so, to be online), has another structural bond/risk that it is better not to forget, represented by ways of communication that are basically "cold", essentialised; in other terms, the languages and expressive ways that are typical of the "machines" rather than "warm,

polysemous and polysemantic" ways (Thompson, 1998, chapter 3), that are surely subordinated and impoverished by the previous ones, or completely disappear.

The use and the issues related to Computer Mediated Communication (Paccagnella, 2000), as we know, were born in the '70s based on some teleconferencing experiments conducted by Murray Turoff on behalf of the Institute for Defence Analysis. (Hiltz-Turoff, 1978)

Turoff tried to use the Computer Mediated Communication for the Delphi applications, a research methodology about contexts through the support of experts, with the aim to make reliable collective hypothesis. Starting from the innovative work of Hiltz e Turoff, the focus has been brought on the productive potentialities of the CMC, on its applications in the business context, in team working and public administration and, then and more generally, for the development of knowledge and learning.

Briefly reminding about a synchronous CMC when communication contemporarily happens between two or more users, like in any other telephone or face-to-face dialogue (or, otherwise it would be asynchronous), the main difference between the two types of communication consists of space and time factors of virtual co-presence that is the presence, or not, of a real time connection among the users that are "lost in space".

In the synchronous communication, the real time connection is, as we said before, a fundamental feature. The most immediate example is the system of the Internet Relay Chat (IRC), a form of synchronous CMC where people, chatting (discussion group), can exchange messages in the form of a text. A variation of the IRC are the MUD (multi users dungeons), virtual environments, text-type, where the users, apart from talking to each other, can visit the space where they are and interact with the objects.

For many years the CMC and the social interaction on the telematic nets, have been a scientific subject matter and have represented an interesting topic above all in the area of sociological studies concerning both the communication processes and the interaction and social changes ones.

The first systematic research branch on the CMC, developed at the beginning of the 80's; on the one hand, such studies aimed to describe and explain why telematics could be effectively used in the processes of *office automation* (that were about to born),

on the other, they aimed to describe the characteristics and the intrinsic effects of these new communication technologies. It was about an evaluation of the socio-psychological aspects of the new communication technologies above all, that were used in the workplace.

a) The RSC model

It is about a model drawing inspiration from the concept of social presence and media richness, developed by Short e Williams (1976). The idea of Short was that the CMC was "characterised by a very low level of social presence because lacking of the non-verbal elements that characterize the face to face communication". (Paccagnella, 2000, p. 23)

By "social presence", Short meant the user perception of a means of communication, of its ability of conveying the presence of the connecting people, while by "media richness" he meant the ability of the means of communication to link different topics, making them less ambiguous and offering the possibility to learn them during a certain time break.

Exactly from these concepts, the RSC model was born, about ten years later, whose basic assumption is that the CMC is inherently poor, lacking in meta-communicative channels (gestures, the pitch of the voice, …), typical of the face to face communication.

The immediacy of the CMC, the lack of the typical elements of feedback, could create problems of coordination and full understanding of messages. The problem is that communication happens within a social "vacant place" where words are the only reality: in this case, in a world made of words, they not only represent the information but also the action; we can think of the fact that the same identity of the people interacting among them is linked to a description written on a computer desktop. It is exactly within this social "vacant place" that the identity of the involved people would tend to fade and then disappear.

The fact that the social cues are reduced, would also lead to an incapacity to reproduce, online, the social and status differences and so to a significant levelling of relations, also known as *status equalization* effect.

In this case we would participate to a levelling of the users social influence capacities and this would be provoked by the fact that the status differences remain latent. Moreover, computer mediated

interaction would lead to a more free and informal communication style because of the speed of the medium and norms failure regulating the interaction. People interacting via computer are isolated from the social rules and feel safe from control and criticisms: that makes them feel less inhibited in their relationship with others.

It would seem confirmed the hypothesis of status equalization, leading to consider CMC as having effects inherently democratizing. The consequence would be a democratization of social relations, but we must say that this theory has been criticized. In fact, there are many studies showing the tendency to keep the pre-existing status barriers, denying the claim of social levelling (Galimberti-Riva, 1997). The "equalization" effect would be caused by the lack, inherent to the medium, of social information. In other words, the limited broadband that is the quantity of information that the medium is able to spread in the time unit, would limit both quality and quantity of information transmitted by the CMC.

In these terms, we can claim that the CMC comes up, since the beginning, as a non-hierarchized, reticular and fragmented communication.

b) The social context or situated action model

Lastly, there is another classical approach to the CMC that could be defined "ethnographic" given that it focuses on the importance of the social context. Mantovani supports such approach, considering the position of Sproull e Kiesler (in Mantovani, 1995, chapter 2), according to which the CMC happens in a sort of social vacant place, inacceptable because it reduces the social to "some form of connection among people". In order to be out of the social context, it is not sufficient to be alone into a room: a relation that, according to Sproull and Kiesler, is technological, univocal, generalized and unidirectional, can be seen as socio-technical, multiple, dependent on the context and circular (the experience of people interacting via CMC depends on the kind of group and context and it will be a different experience according to the different contexts and groups of reference, and their feedback will retroact on the web, changing it).

The "situated action" by claiming that action is when people adjust themselves to the context where they are; the approach of the situated action does not separate the action from the circumstances generating it, but wants to study how people use them in order to

develop an "intelligent process".

Being further from a deterministic conception of the inherent effects of the CMC, the supporters of the social context theory focus their attention on the context where communication occurs, and on the various ways the context affects representations and interpretations that actors provide about their own actions.

The context is defined as dynamic and multilevel, continuously changing, where the cultural heritage and the cognitive structures guide people's actions in their communication exchanges.

So, the context turns out to be changeable given that the cultural models are constantly changed by people's actions and choices. Moreover, it is not only physical but also conceptual: actors perceive the situations through the models introduced by the cultural order and act according to them (Mantovani, 1995, chapter 2).

Mantovani creates a model of the social context that is made up with three levels (interconnected and interdependent), that can be considered as follows:

1. Social context in the most general sense
2. Daily life situations
3. Local interaction with the environment through information artefacts

There are two possible interpretations of this model: in the first case, we can affirm that the social context in general provides the elements that allow the interpretation of the situations where the purposes guiding the local action with the environment through the artefacts, develop.

In the second case, considering an alternative interpretation of the model, we can affirm that the daily routines interact with the artefacts and can assimilate to the social context by favouring its adjustment to the changes provoked by the daily situations. It is about a model linking situations, social rules and use of the information artefacts.

Therefore, there is a circular relation between action and context, where the action acquires meaning only in a specific symbolic context that, in turn, is continuously changed by the human action. It is very important to underline how in the previous model, communication is not considered as a simple information exchange, but also as an exchange of meanings that, as we said before, are a

fundamental element of the human interaction.

The relativism of such approach does not match with the typical determinism of the RSC model, by criticizing also the idea of the so-called "democratic nature", that is inherent to the model.

In reality, the CMC cannot be considered as a tool setting behaviours that are more or less democratic, deviant… because they depend on several factors among which, not less important, there is exactly the specific context where the action sets itself.

Structured social interactions: the virtual communities

The virtual communities (or online), constitute a specific and important area of online oriented interaction involving not only general interpersonal aspects but can be differently classified according to functions, logics and practices of learning, professionalism, broadly speaking, organization, governance and business, knowledge learning and development.

As we have already said, the technology changes not only modify the forms of communication but more in general the forms of social aggregation, producing new phenomena. In order to understand these changes, first of all we need to understand the genetic mutation of the information and communication technology: from being tools of data processing and transmission, the new technologies have become communication tools, with unexplored potentiality.

The main factors characterizing these changes are two: the first has to do with the redefinition of the structures of communication flows among people, the second has to do with the passage from conveying codified data to multimedia.

As far as the first form of change is concerned, it is worth underlining how the mass production made us used to an opposition among both logics of interpersonal communication and mass communication; the web is making this opposition basically obsolete, through a synthesis synergically integrating forms of communication one to one and one to many, favouring interactions among people and filtering the standardized information on the base of parameters and categories specified by the user.

The second form of change, the transformation of the web from a vehicle of codified data to multimedia, has as main effect

the valorisation of contexts; at the time that information and communication technology have not been any more a prerogative of the big companies that could financially afford the complex cycle of knowledge coding and re-contextualization, the multimedia has provided the opportunity to convey contexts and produce down market. The new tools of communication and online cooperation allow the users to exchange different kinds of messages (text, sounds and images), creating new cooperation environments. The new technologies considerably reduce the coordination and communication expenses by limiting the use of knowledge coding procedures. In this context of structural change of technologies, the virtual communities get a foothold as new forms of organization of communication, sociality, professional, training and market related interaction, as we have already claimed.

The diffusiveness of knowledge represents a distinctive feature of the community, as regards the traditional organisational forms, founded on the opposition between centre and periphery; knowledge is continuously enriched with experience and the community becomes a device of social learning. But communities can be classified into two typologies: traditional and virtual communities. The first ones are known as modernization of society, based on the person as full participant of the civil society; the virtual communities can be defined as "the distribution of people and knowledge in space and time".

Making reference to the root characteristics qualifying a virtual community, it is possible to categorise the virtual communities. The dimensions of reference, used in this context, are two: participation and information dimension.

The information dimension of a community reflects the importance that a specific group of people assigns to a common series of data. Sharing such interests, both economic or cultural, links people wishing to benefit from relevant information for their own job or any other activity; the telematic space they make use of, is essentially made up with databases whose attractiveness depends on completeness of their own files and on easiness and speed of reference. The participation dimension, is probably more emphasised by the web supporter: Internet represents a moment of dialogue and relation, open and not conditioned by external subjects.

This is a general overview, conditioned by the idea, hypothesis or

fear that the development of the virtual communities will probably affect the future of the social and relational life of people. It is quite obvious, but such obviousness leads most researchers to contrast on the extent and quality of such influence, on what will happen to the real communities, to have different opinions on the possibility and capacity of the new online communities to replace the real life (adjective that is really used). In some cases, the contraposition is so clear to become dramatic and put the same possibility of men to keep their social and affective life into play.

The first consequence produced by the success of the virtual communities (or online communities), is the growth of the atypical moments of interaction, that do not respect the main requirements of the traditional community. In fact, for the first time in the history of sociality, "there is a spread of social interaction behaviours that are absolutely indifferent to those factors that have always marked and limited the concept of community: the space positioning, the physical contiguity, the sharing of an area that is both a tool of acceptance and exclusion of those who do not know its hiding places. We see a transition from the undifferentiated community of people using the advanced technology to a more precise organisation of a series of "communities", based on information and opinions exchange, acting outside the borders of the traditional community" (Prattico,1999, p. 6).

The discriminant factor between a new and old community, is that the development of the telematic nets has overturned the traditional space and time parameters: in the interconnected world, the neighbour is no more the person living next to us, but the person "replying" in a few time.

Distance is no more a matter of space, but only of time, coinciding with the speed of the bit produced by the strength of interconnections. It happens that a fellow citizen having a "weak connection" is further than the person living overseas with whom we exchange, daily and in real time, opinions, pictures and virtual items.

So we can think that the power of discriminancy that, within the traditional community, is mainly ascribed to the knowledge of the area and that supports both the direction and meaning of the community itself, becomes, within the online community, the sharing of an ideological area, or at least ideative, where the common interests represent the "binding agent" of interaction.

Anyway, this idea derives from the habit to consider the social community traditionally. In fact, many scholars of the virtual communities claim that simply increasing the connectivity, even the community grows.

According to De Kerckhove (1999), the two terms (connectivity and community) can be considered as synonyms: it would be sufficient to have the first in order to be part of the second. In this conception of community, as we notice, the "territory" not only disappears because the distance is no more the same, but also its discriminating function. By learning to consider the community as connectivity, in fact, the discriminancy loses its power (only the structural detachment with the people that are not connected), and even the meaning of the community diminishes.

All that is also the strength of these communities, the "secret" of their success, based first of all on the centripetal vector of attraction, involvement, integration: "there is a great difference between the electronic connectivity and the traditional, social or political community. The latter has always based itself on the inclusion of someone and the exclusion of others. Instead, connectivity does not distance anyone. There are a lot of people on the web, but the single person is not absorbed or rejected; the secret is that the web is able to make two items that are generally incompatible, like the single and the mass, coexist at a psychological level. The single person on the web takes part into the mass without fearing the strength of the number, and the mass makes the same with the single without repressing them. This is what I call connectivity" (De Kerckhove 1999, p. 20).

We understand the difference between the electronic connectivity and the collectivity, socially and politically speaking. The traditional community defines itself by elimination, and on that it bases its criteria of belonging. While the virtual community uses different ways to define its existence, direction, or at least it seems. Probably it is not easy to identify them.

We can easily identify two concepts, expressed differently, that can be considered basic criteria, common to each virtual community for the construction of a "reasonable" interaction. They can be identified with the terms "relevance/punctuality" (ibidem).

The first consists of the capacity of a community to interact building a correct correspondence between demand and supply of interaction and learning, focusing on a fact or topic that the community is

interested in. We can understand how the communities developing a common interest, political, medical, playful, of study, research, voluntary work, are "relevant". There are many particular communities keeping their relevance, but it is difficult to identify their basic interest; like some groups of people, for example associations of mutual assistance, even having a clear common purpose, cannot create a "relevant" community of interaction. Essentially, the virtual community is "relevant" when working; if it's not, it does not work anymore. The second characteristic of all the virtual communities is "punctuality", meaning that its underlying reason is continuously and precisely validated in every moment the interaction occurs. It is a characteristic directly deriving from the demolition of distances and times of crossing, allowed by the web, and that in the Internet it is identified with the concept of just in time.

About teaching and learning communities as communities of practice of knowledge

Teaching communities (Costa-Rullani,1999) are characterised by a traditional didactic approach of teaching kind, knowledge is all put in trainers that pass it to learners through multimedia tools. Learners gain it both through a process of cognitive recomposition of knowledge and relations established with other members.

Teaching communities surely represent one of the successful elements of distance training projects but symbolise only an intermediate stage of a process aiming at creating the community of practice. First of all we need to remark how communities of practice are typical in professional training more than in educational training.

In the communities of practice knowledge and learning are not exclusively within the scope of trainers, as it occurs in the teaching communities where we assist a one-way process of knowledge transfer from trainers to learners (relations among participants, even if important, are surely pushed into the background because aiming at exercising functions of explicitation and explanation of that knowledge passed by the trainer), but each member has his or her own store of knowledge coming directly from the action, that is facing and solving complex problems during his or her daily activity.

Possessing their own specific, contextual, unique and not easily reproducible store of knowledge, creates a complex system of relations among all participants for the sharing of this knowledge. Communities of practice can be defined as group of workers that are informally linked to each other by sharing a common series of problems, by looking for common solutions and becoming providers of a common set of knowledge. This complex system of dialogues and variables structure (not pre-defined, differently from what happens into the teaching community, where they are basically one-way), not only supports the process of sharing of specific and unique knowledge of participants, is the precondition of a process of creation of new knowledge. This does not mean that there are not processes of knowledge transfer that are teaching-type and that are kept, but with a minor role compared with the learning process deriving from the process of interaction of competencies and knowledge of participants. The learning communities represent a place of creation and diffusion of new knowledge deriving from the interaction of proactive and active people, in terms of knowledge makers and creators, differently from what happens into the teaching communities, where learners are mere receivers, and often repeaters, of a prepared and packed knowledge.

The sharing element linking the members of this kind of community is the practice. With this concept we mean the progress of a professional activity/action but not to be considered as an activity as such, but as an activity that finds itself in a specific historic and social context giving it a structure and a meaning: it would be more correct to refer to social practice (Costa-Rullani, 1999). Such concept of practice includes tacit and explicit aspects, what has been said or not, what is represented and what is expected. It includes language, tools, contents, images, symbols, well-defined roles, specific criteria, codified procedures and the contracts that an activity (practice) requires. But at the same time, it also includes all the implicit relations, tacit norms, slight suggestions, unsaid rules, recognizable intuitions, specific perceptions, incorporated knowledge, shared points of view, that could never be articulated and structured, but representing some unmistakable signals of belonging to a community of practice and that guarantee its functioning. Learning is the driving force of the practice and practice is the result of that learning: as a consequence, the learning communities have a life cycle reflecting that process.

Communities join together (arise), develop, evolve, disperse themselves according to time, logics, rhythms, and the social energy of their learning.

A community of practice, more than a community of people that learn, is a community that learns. Participants do not limit themselves to share and benefit from other people's experiences, are not involved to develop some better practices together. In other terms, they are an absolute possibility of realization of the knowledge society.

Therefore, knowledge is the strategic resource of the millennium for sure, but to make it as a real wealth, that is product, must be fully accessible and usable. In this respect, we need to remember the structural characteristics of a regular process of knowledge creation/development:

Data, information and knowledge

Briefly defined by Rob Van der Speck (2000) as "symbols that have not been interpreted yet", according to the works of Devenport and Prusak (1998) organisational data are generally characterized by a series of discreet and objective facts concerning the world and its events. Most organisations gather a significant quantity of data inside databases that are highly structured. Moreover, most companies obtain demographic information, competitive or other kinds of statistics about the market from external sources. The central activity that provides the business data with surplus value consists of the capacity to analyse, summarise and turn data into information and knowledge.

Information is a series of "data to whom a meaning has been assigned" (ibidem). Information is the final result of a work involving location and contextualization of experiences and ideas. Information, also considered explicit experiences, is normally filed as contents that are semi-structured into documents. The central activity that allows to increase the surplus value of information consists in managing the content in order to make it easily traceable, reusable and in learning from experiences in order not to repeat the same mistakes and duplicate the work.

According to an absolute sharable interpretation, the human knowledge gets into two categories: tacit and explicit knowledge. They are often considered opposed but they are instead fundamental constitutive units with a complementarity ratio to each other

(Nonaka-Takeuchi, 1995).

The concept of tacit knowledge has been clarified by Polanyi (1966): he focuses on the importance of a "personal" way of building knowledge, influenced by emotions and gained at the end of a process of active creation and organisation of experiences of each person. When a person tacitly knows, he or she makes and acts without distance from things or people, uses his or her own body and has a great difficulty in explaining the process he or she has been involved in, using words, rules and algorithms. A tacit knowledge means to know without distance from things or actions; the cognitive interaction among people is characterised by unaware observation and social and collective proximity.

Polanyi says: "we can know more than what we can tell" (1996, p. 25), and in one of his thesis he claims that all the knowledge is either tacit or based on tacit knowledge.

According to Nonaka and Takeuchi (1995), it would be necessary to distinguish two different dimensions of the tacit knowledge. The first is the technical dimension, involving abilities and capacities, hard to be defined and so often reported with the term "know-how": subjective perceptions, intuitions, expectations and inspirations coming from the body experience belong to this dimension.

The tacit knowledge contains also an important cognitive dimension: it consists of certainty, sensations, ideals, emotions and mental models that are settled in ourselves. Even though they cannot be easily expressed, this dimension delineates our way of interpreting the world around us.

On the contrary, the explicit knowledge is codified, expressed according to formal and linguistic ways, easily communicable and preservable, expressible in words and algorithms; even if in the western culture is considered as a main knowledge, it only represents the tip of the iceberg of the whole knowledge process. Nonaka e Takeuchi affirm that the mechanism of knowledge creation consists of a "...mobilization and preservation of tacit knowledge, that is the organisational ability of managing the individual knowledge, using it, creating explicit knowledge to allow the development of a spiral of knowledge creation. The spiral develops when the interaction between explicit knowledge is dynamically elevated from the lowest to the highest levels. An organisation should be provided with the strategic capacity of using, storing, sharing and creating a new knowledge continuously and repeatedly in a dynamic spiral

process" (Nonaka-Takeuchi, 1995, pp. 34-35).

Knowledge conversion and creation

As we have already underlined, the two knowledge entities (tacit and explicit), are mutually complementary and interact between each other in a continuous interchange during the creative activities practiced by human beings. Nonaka e Takeuchi's model of knowledge creation is based on the fundamental assumption according to which human knowledge creates and spreads through the interaction and that can be called "knowledge conversion". It is about a social process among people, outside of the inside borders of a single person.

The hypothesis why knowledge develops from the interaction between tacit and explicit knowledge implies four different ways of knowledge conversion:

> 1. *Socialisation*, from a tacit knowledge to another tacit one.
> 2. *Combination*, from an explicit knowledge to another explicit one.
> 3. *Internalization*, from the explicit to the tacit one.

Socialization often starts from the construction of a field of interaction making the conversion of experiences and mental models of participants easier. Externalization gets going from a "dialogue or a collective reflection", where the use of metaphors or suitable analogies helps the team members to formulate tacit, hidden knowledge, otherwise hard to be communicated. Combination starts from the "networking" of knowledge that is newly created or already consolidated and coming from other sectors of the organisation and their crystallization in products, services or innovative management systems. Finally internalization gets going from "learning through experience".

The content of knowledge that generates from each way of knowledge conversion is obviously different. Socialization produces "sympathetic knowledge", mental models and shared technical abilities; the output of the externalization is the "conceptual knowledge"; combination generates a "systemic knowledge" and internalization, finally, produces "operative knowledge". Therefore, the basis of knowledge creation is the capacity of the community to make the individual tacit knowledge circulate, making it

"organizatively" expanded through the four ways of conversion, and crystallized at higher levels. We can indicate this process with the expression "knowledge spiral". Here the interaction between tacit and explicit knowledge becomes wider and wider, as long as they go along the anthological sequence. Therefore, the creation of knowledge is a spiral process moving from the individual level and involving wider and wider forms of interactions, through the borders of any type/nature.

As Gentili (2006) highlights, Wenger (2005) has underlined the social nature of his learning theory, considered as a structure nourishing itself from the continuous tension between experience and competence, through a negotiation of meanings supported by a continuous dialogue process. The term competence, according to Wenger, involves all the signals through which the members of a community of practice identify themselves one another, and is acquired through a continuous innovative tension with the experiences that are negotiated and reorganized and through them the members of a community recognize each other by defining a common identity. The approach to the concept of learning, and as a consequence to the concept of competence, that this theory proposes, underlines exactly the element of the continuous tension. This dynamic tension is created by the interferences of the dissonances occurring both inside - through the three dimensions of domain, community and practice - and outside the community; through the integration of new members and the proposal of new problems to be solved. In fact according to Wenger, the interaction between experience and competence, can happen through two ways:

- apprenticeship: here, the competence of the community drives the experience of the newcomer through a negotiation of meanings. Thanks to this continuous process, it happens a gradual accordance of the experience of the new member (apprentice) to the system of competences of the community.
- such tension can also happen in an opposite way: sometimes, it can happen that the experience of the newcomer drives the competence of the community and sets a new structure and realignment. In fact, it can happen that a new member introduces, within the community, a new proposal, a new experience that is so different from the current competence,

creating great dissonances and interferences. When a new member, after being accepted into the community, is able to negotiate his or her meaningful experience, through the participation proposal to the members and its persuasive reification, will be able to attract all the group and, after a time, to change and realign the competences of the community in a new way, creating new learning.

These two ways of interacting are crucial for the evolution of the practice of the community and, until they determine an unsteady balance that continuously realigns, they guarantee a chance of development and learning to the community.

When thinking of the learning developing within a community of practice, we need to distinguish between what happens inside, in the "heart" of the community, and what happens in the borders, because the relation between competence and experience has different connotations and values according to the area where it occurs. As long as the learning occurs centrally, both elements (experience and competence) join, "push themselves", create a "learning convergence".

Instead, in the borders, the divergence of these two elements generates learning: in the borders of every community of practice couples of different experiences and competences crash and the learning generates exactly from the tension provoked by this complex divergence, but it is a different process from what happens inside the community.

Creation of a community of practice

In order to implement a virtual community that can be, at the same time, the core of a system of dialogue relations and an environment generating knowledge, and also able to value the social fabric of a productive system, it is necessary to define some guidelines of intervention on those determining the good ending, and making these communities be the main actor into the knowledge economy in the time of the web (Costa-Rullani, 1999, pp. 208-232). The creation of a community, contextually needs:

- a management model, able to support and help the promoters of the implementation project of a community. Such method must have a double value to represent, on the one hand, the point of reference and management focus that each promoter needs to follow for the creation of a community; on the other, not to be a strict normative system preventing any adjustment to the context and the environment where the community inserts itself;
- a technological model: the technological support represents an essential and crucial element to lead the community to the success. The actual lack of supply in this sector and the need of customization, to value the contextual varieties, can lead the promoters, if they have the necessary resources, to plan and develop their own community software ad hoc.

Management model

The management model is made up with the following five phases:

Phase 1: System analysis
In a specific social system, of course there can be a variety of community of practice, the use of the following criteria could allow a more correct selection of the most suitable and relevant community for the future competitiveness of the system:

- the relevance of the community knowledge;
- the intensity and relevance of the interactions among the community members;
- the sharing of a common set of technical and managerial knowledge;
- the supports to the collective learning processes of the community of practice.

Phase 2: Analysis of the community
When the community of reference has been identified, it will be necessary to prepare and introduce the purposes and guidelines of the project, in order to show and explain the value and the potential of the use of the new communication technologies to the possible users, as a support to a community of practice. If the answer is positive, the analysis can start. The distinctive and specific characteristics of the community will be examined:

- identification of the technology used by the community (communities of professional, horizontal, and product service communities, vertical);
- main tools for training and knowledge development;
- main limits to the professional growth;
- role of the formal and informal interaction with other professionals;
- which are the functions of the community.

The analysis will end with the elaboration of a document that, after being analyzed by the panel, will constitute the guideline for the following phases.

Phase 3: Plan the virtual community
The planning of a virtual community has the purpose to analyse the requests of the participants, by focusing the two main elements of the system on them: community knowledge, roles and interaction.

a) Definition of the knowledge community
The planning of the community model requests:

- design of a "library of ideal objects", to resort to solve specific problems;
- predisposition of self-training forms for the people arriving at a later stage or needing to be updated on the previous works;
- definition of the knowledge service and extra services;
- identification of the key features to categorize the basic knowledge;
- planning of the research rules to explore the database.

Any attempt to plan these aspects will have to be preceded by a clear identification of the interests of the community members, in order to define a system of material and a learning process that is considered useful by the members.

b) Definition of roles & interaction
The roles and interactions constitute the dynamic part of the system, because they are at the base of a process of new knowledge creation, that will characterize the evolution of the community.

The model will have to take into account:

- The different ways of formal and informal interaction, occurring among the members;
- the possible workflow among the members of the community that could directly cooperate;
- the process of validation, that transforms the dialogues and observations of the members into official basic knowledge.

The need to guarantee a dynamics of learning and growth, imposes the identification of specific roles, such as:

- *Knowledge manager*. He or she defines the library of objects, proposes relevant topics of discussion, establishes the stages and timing of the approved cycles determining the validation of the knowledge.
- *Community leader*. He or she legitimates the topics. Moreover, in the phase of test, he or she will have an active role in terms of interventions and observations.
- *Facilitator*. He or she represents the interface to whom the members can resort for the organisational, managerial and technical aspects.
- *System administrator*. He or she manages the technological aspects of the system, such as the access management through username and passwords.
- *Guest speaker*. They are experts called to widen specific topics.

Phase 4: Implementation of the community
It is the start-up phase, the beginning of a professional virtual community, surely representing a fundamental moment and needing a series of crucial activities in order to start the community successfully.

a) Dimension of the community
A high number of members can represent a greater dialogue dynamics, but there could create chaos too. They need to point to a balance between these two opposed needs, taking into account that there is not an optimal critical mass, but it depends on the types of community.

Some elements, useful for the definition of the dimension, are:
- the selected topic, that is the benefit that people can have through their participation in the community.
- The familiarity with the technological tools.
- The technological culture

It is possible to imagine a community with a variable dimension that, as time goes by, can reach greater dimensions.

b) Definition of a guideline for the participants
The team will have to create a guideline for the use of the virtual community, focusing on:

- the use of the community software, helping the community members;
- the rules of conduct that the members must respect.

c) To assign the key roles to selected people and think of their training
These forms of experience sharing, on the one hand, increase the typical weakness of the social structures lacking of their own internal hierarchical set of rules, on the other, need to have people with a great authority. The identification of these people within the online community, is surely important in order to create a new environment of knowledge learning and valorisation. When the role have been assigned, the selected people will have to be trained on the use of tools, representing the fundamental prerequisite for the fulfilment of their function.

d) First meeting and strengthening of the team
To offer the chance of keeping and developing good relationships into a virtual context, does not have to be considered as the overcoming of the possibilities and moments of physical meeting.
The implementation of a virtual professional community, during the start-up phase, requests a real meeting when the community leader, knowledge manager and facilitator explain and show to the members:

- which motivations for such experience
- the use of the software

Phase 5: community management
During this phase, the aspects concerning the workability of the community are developed, in particular the strategies supporting its dialogue animation.

a) Favouring the dialogue interaction among the members
In order to avoid that the virtual community becomes an electrical "emeroteque", without the added value that the social dimension is able to generate, in terms of collaborative learning, it is necessary to define a strategy, aimed to favour the interaction among the participants.
Therefore, the purpose is to outline how to facilitate these virtual dialogue relations among the members.
A strategy to favour dialogue and organisation among the members is based on three elements:

- topic of discussion (concrete experiences are better, preferably using a role game rather than theoretical materials);
- role of the facilitator and the knowledge manager (encouraging questions);
- timing of the activities (maximum terms for the discussion of a specific topic).

b) Continuous support to the participants
When the community has been created, it is necessary to think of a help desk system (continuous support), for all participants, about technical and methodological problems.

c) To think of a system for the performance evaluation of the community
They need to identify specific purposes, criteria and necessary information to a group of tools for the performance evaluation (in terms of efficacy and effectiveness) of the virtual community, verifying, in particular, the following aspects:

- the level of learning reached by the participants;
- cognitive products, realized and available from/into the community (*best practices cases*, etc.);
- change of the number of participants of the online community during the experiment;
- change of intensity and quality of the interactions (among

people and among people and resources of the cognitive system);
- integration between the tacit and explicit knowledge of the community and the external knowledge.

d) To learn from the experience for a continuous improvement

The continuous monitoring of the test, through the above-mentioned evaluation tools, will generate feedback. The final analysis will take into account the research and evaluation on data about the trend of the test, and also collections ad hoc, probably through the use of questions and interviews to the participants. All this information will allow to correct the possible gaps and defects, that have emerged during the test, in order to improve the economic value and the competitiveness of the virtual communities.

Conclusions

As we have said before and as a recent research has one more demonstrated (Mormino, 2011), the concept of community (on/off line), is based on the idea that some people, on the base of shared learning and professional practices, structure complex social spaces where there is an interaction and development of socio-relational processes, common learning, common identity, belonging and the corpus of the codified and recognized knowledge, values, languages and the knowledge that joins them, makes them able to exchange and develop knowledge and innovation too.

The online communities take advantage of the great opportunities offered by the ICT and become real system with a diffused intelligence; in fact, within such online communities the ICT make possible, for people that are space/time "dispersed", to communicate, interact, cooperate, learn.

Therefore, communities configure themselves as tools to manage the complexity of the experience and the continuous learning needs characterizing (definitively), our knowledge society.

Consequently, according to specific and distinctive processes of the communities, the knowledge, produced by the people, is moved into the community itself and, at a later stage, reconstituted and re-codified with synergistic results; in fact, the interaction allows to make the tacit knowledge and its definitive valorisation, explicit.

Beyond these important and relevant considerations, it is also necessary to a wider conceptualization on the founded strategic mentality that knowledge (developed, valued and diffused), has not only for the development of single important aspects of societies, but also for the whole development of societies themselves.

References

Costa Giovanni, Rullani Enzo (1999), *Il maestro e la rete*, Milano, IT, Etas

Daniel Ben, Schwier Richard, McCalla Gordon (2003), *Social capital in virtual learning communities and distrbuited communities of practice*, "Canadian Journal of learning and technologies", V.29
nwww.cjlt.ca

De Kerckhove Derrick (1993), *Brainframe*, Bologna, IT, Baskerville

Davenport Thomas, Prusak Laurence (2000), *Il sapere al lavoro*, Milano, IT, Etas

Festinger L. (1952), *Some consequences of de-individuation*, "Journal of applied psychology", n. 47, pp. 22-34

Galimberti Carlo, Riva Giuseppe (1997), *La comunicazione virtuale*, Milano, IT, Guerini & Ass.

Gentili Giuseppina (2006), *Apprendimento, esperienza e competenza*
www.formare.erickson/archivio

Hiltz Starr Roxanne, Turoff Murray (1978), *The network motion*, Chicago, USA, MIT Press

Malizia Pierfranco (2006), *Comunic-a-zioni*, Milano, IT, Franco Angeli

Mantovani Giuseppe (1995), *Comunicazione e identità*, Bologna, IT, Il Mulino

Mormino Sara (2011), *Together*, Roma, IT, Polìmata

Nonaka Ikujiro, Takeuchi Hirotaka (1995), *The knowledege creating company*, NewYork, USA, Oxford University Press

Paccagnella Luciano (2000), *La comunicazione al computer*, Bologna, IT, Il Mulino

Polanyi Michael (1966), *The tacit dimension*, London, UK, Routledge & Keagan

Rheingold Howard (1994), *Comunità virtuali*, Milano, IT, Sperling & Kupfer

Short John, Williams Ederyn, Christie Bruce (1976), *The social psychology of telecommunications*, London, UK, Willy

Sorrentino Giovanni, Ranieri Livia (2008), *Apprendimento 3D: competizione evolutiva o integrazione?*
www.didagroup.it

Thompson John B. (1998), *Mezzi di comunicazione e modernità*, Bologna, IT, Il Mulino

Van der Speck Rob (2000), *Knowledge Management: dealing intelligently with knowledge*
www.public.gbg.frontec.se

Valentini Carla Beatris, Soares do Sacramento Eliana (2005), *Aprendizagem em ambientes virtuais*, Caxias do Sul, EDUCS

Wenger Etienne (2005), *Le comunità di pratica*
www.sbilf.wenger/index

Wenger Etienne (2006), *Comunità di pratica*, Milano, IT, Raffaello Cortina

Wenger Etienne, White Nancy, Smith John (2009), *Digital habitats*, Portland, Cpsquare

Sintesi

Le trasformazioni tecnologiche da tempo in atto hanno modificato non solo le forme di apprendimento, ma più in generale, le forme di aggregazione sociale, producendo fenomenologie radicalmente nuove.

Per capire queste trasformazioni, bisogna comprendere prima di tutto la mutazione genetica delle nuove tecnologie dell'informazione e della comunicazione: da strumenti di elaborazione e trasmissione dati, le nuove tecnologie si sono trasformate in strumenti di comunicazione, con potenzialità ancora oggi non del tutto esplorate. I principali fattori che caratterizzano questa trasformazione sono due : il primo ha a che fare con la ridefinizione delle geometrie dei flussi di comunicazione fra persone, il secondo con il passaggio dalla veicolazione dei dati codificati alla multimedialità.

Per quanto riguarda il primo elemento di cambiamento, vale la pena sottolineare come la produzione di massa ci abbia abituato a distinguere fra strumenti per la comunicazione interpersonale e strumenti per la comunicazione di massa, la rete rende sostanzialmente obsoleta questa opposizione, attraverso una sintesi che integra sinergicamente modalità di comunicazione one to one e funzioni di comunicazione one to many, inoltre garantisce funzioni di dialogo fra persone e filtra le informazioni standardizzate sulla base di parametri e categorie specificate dall'utente.

Il secondo fattore di evoluzione, la trasformazione della rete da veicolo di dati codificati alla multimedialità, ha come effetto principale la valorizzazione dei contesti nel momento in cui le tecnologie dell'informazione non sono state più appannaggio delle grandi strutture, che potevano sostenere economicamente il complesso ciclo di codificazione e ricontestualizzazione della conoscenza, la multimedialità ha dato la possibilità di veicolare contesti e di produrne a costi limitati. I nuovi strumenti di comunicazione e di cooperazione in rete consentono agli utenti di scambiare messaggi di tipo diverso (testo, suoni e immagini) creando nuovi ambienti di cooperazione. Le nuove tecnologie riducono notevolmente i costi del coordinamento e della comunicazione, perché limitano l'uso di procedure di codificazione della conoscenza. È in questo contesto di modificazione strutturale delle tecnologie che prendono piede le comunità virtuali, come nuove forme di organizzazione dei processi di apprendimento collettivo e di sviluppo della conoscenza condivisa, di modo di lavorare insieme, di fare business,di conoscere/apprendere.