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Dilemmes dans la construction d'une capacité d'action partagée de transformation

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Dilemmas in building shared transformative agency

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ABSTRACT
For several reasons, not least because of the information and communications technological revolution, there is an increasing need for deep qualitative transformation in business activities involving the development and implementation of entirely new concepts. Traditionally this kind of change process has involved the top-down imposition of a pre-existing new model. This approach does not stimulate the local initiative or creative experimentation needed for carrying out complex transformations, however. There is therefore a need for an intervention method that allows for practitioners not only to apply a given new concept in transforming their activity, but also to analyze the need for change and to develop and implement a new concept in order to meet current challenges. This calls for the breaking away from given frames of action and the taking of initiatives to transform them collaboratively. The Change Laboratory is an intervention method specifically designed for prompting and supporting this kind of shared transformative agency. Many steps have to be taken before a work community evolves form independently acting individuals into a collective subject of sustained transformation effort. This article describes some of the major dilemmas involved in building shared transformative agency on the basis of experience in carrying out Change Laboratory interventions in various organizations. The possibility of creating cross- organizational collaboration in developing a new concept for a certain type of activity is also discussed.

KEYWORDS
Developmental intervention, agency, transformation of work, participation

1.- Introduction

Individual agency can be understood as the breaking away from a given frame of action and the taking of initiatives to transform it (Engeström, 2005a). When a group of people does this and search collaboratively for a new form for the productive activity in which they are engaged we could speak of shared transformative agency. It is commonly recognized that transforming an activity needs a form of collaboration that crosses established organizational boundaries (Kotter, 1996). Traditionally, however, agency in transforming work activities is ascribed to management and specialists, while grass-roots level practitioners are expected to focus on their tasks within the given frame of action rather than involving themselves in changing the structure of the activity system as a whole. Research findings concerning the high failure rate in top-down change programs (Ciborra, 2002, Beer et al. 1990) indicate that this kind of sharp vertical division of labor is becoming increasingly problematic in the current conditions of rapid technological development. Its propo-

nents tend to underestimate the need for the knowledge and creative contribution of grass-roots-level practitioners in the transformation of an activity system. Practitioners' knowledge and experience is needed not only for developing the way in which they perform their specific tasks, but also in renewing the whole activity system in which they are involved. Methods of developmental intervention do not traditionally support the active, collaborative involvement of practitioners in the transformation of activity systems[1], however.

I argue in the following that there is an increasing need for a new kind of developmental intervention that prompts and supports practitioners' active involvement in transforming the system in which they are involved and their development into a collective subject of change. I will first discuss levels of change and explain the idea of *the specific concept of an activity* and its use in describing major qualitative transformations in collective work activities. Then I will discuss the changes in production concepts and the ongoing change in business models. Thirdly, I will present an activity-theory-based methodology of Developmental Work Research and the Change Laboratory method as ways of supporting the process of collective concept formation and practitioners' collaborative agency in transforming their activity system. I specifically focus on the dilemmas involved in turning a set of individuals into a collective subject and agent of transformation, in other words building shared transformative agency. Finally, I will discuss the need and possibility for a new type of network intervention in the development of a new concept for a type of activity.

2.- The specific concept of an activity

R. Jaikumar's (1988) historical case study of the development of the arms manufacturing firm Beretta helps to clarify the idea of the specific concept of an activity and its transformation. Jaikumar identified five expansive transformations in Beretta's production system since 1800, in which the basic logic and structure of the production activity changed, in other words the production concept was transformed. The historical increase in the productivity and flexibility of the production process was mostly due to these transformations. In each of them, all the elements of the production activity, its object and outcome – in other words the kind and variety of arms produced – its tools, division of labor, and rules were changed qualitatively and made mutually compatible according to a new logic and principle. The firm expanded its capacity to handle sources of variation in the production so that, in the end, it had acquired the capability, in principle, to produce an endless amount of product variants without the variation affecting the costs. On average, it took about ten years for the firm to learn to master a new production concept, although the time span of the transformation cycles had shortened over the years.

The historical change in Beretta's production concept is an example of the general phenomenon that the development of an activity is not a linear process, but proceeds though cycles of transformation in which its object, outcome, tools and overall logic change qualitatively. The qualitatively different forms created in these transformations could be seen as representing different specific concepts of carrying out the same activity. In any period there are different forms of the same activity representing different specific concepts, just as there are, old-fashioned and modern restaurants and different types of restaurants for different needs and client groups.

Engeström's (1987,78) general model of an activity system is helpful in explaining the specific concept of an activity (see Figure 1). This ontological model depicts the basic elements of such a system and their relationships. The key element is the object/outcome. The outcome is the specific value or

1. Even the Scandinavian approach of designing new computer systems in a participatory way (Ehn & Kyng, 1991) and participatory action research (Whyte,1991) focus on participation on the level of individual tasks rather than on the level of the whole activity system.

set of values created through the activity, and thus also represents the societal motive behind it. The object/outcome of the activity is a process of transformation in which a given situation or object is transformed into the outcome. This transformation happens through the coordinated actions of the actors involved in the activity, in other words the community of the activity system. It is realized by means of specific intellectual and practical tools, the division of labor within this community and the rules that drive it.

The value created in the activity is in its individual outcomes. Specific tools, knowledge, rules, forms of collaboration and the division of labor develop only when similar objects are repeatedly dealt with and similar outcomes produced, however. Therefore, an activity system is always tuned to a type or class of objects. The object/outcome thus exists on two levels, that of individual objects and outcomes, such as when a shoemaker makes a pair of shoes from leather, and that of the category of objects that the activity system can deal with and outcomes it can produce. The *specific concept of the activity* manifests itself in the specific character of its generalized object/outcome, the principle of dealing with the object and reaching the outcome, and the corresponding relative compatibility of the elements of the system.

A major qualitative change in any of the elements of the activity system, such as the implementation of new tools, leads to incompatibility and contradiction between that element and others in the system, which can be overcome only by making corresponding changes in the other elements. We could speak of a transformation of the concept of an activity when the object/outcome of the activity has been reconceptualized and all the other elements of the system have changed correspondingly[2]. In the Beretta case, as Jaikumar described it, the transformations of the production concept were mostly triggered by changes in production technology that called for changes in the other elements of the activity (see Figure 1). There are, of course, also changes in the elements of an activity that do not lead to a major change in its object and outcome and to transformation of the concept, but rather result in incremental adjustments within the current concept.

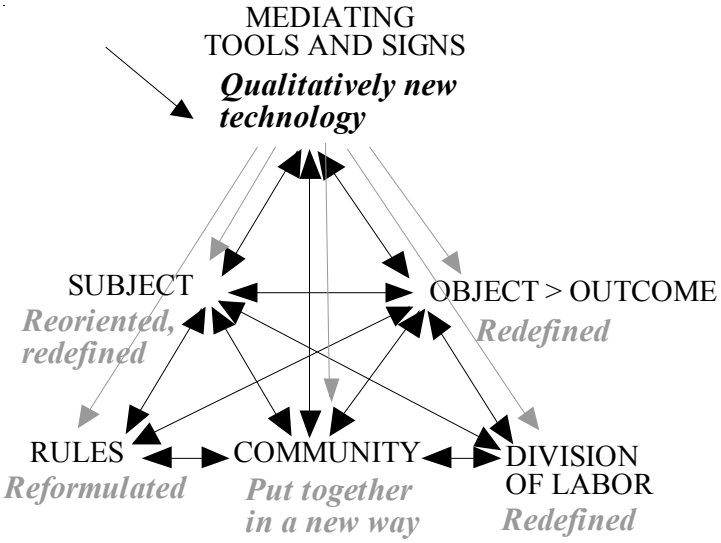

Figure 1.- Transformation in the concept of an activity

2. Spinosa et al. (1997) proposed a pair of similar concepts. They use the term “disclosive space” to describe systems of human practices and equipment used in carrying out tasks to realize a broader purpose, such as building a house. These systems are coordinated by a *style*, which, according to them, is what meaning in human activity is based on: it coordinates actions and determines how things and people matter.

Specific business, production and delivery concepts (or models) have primarily been understood in management literature as representations of the structure and logic of the activity created in design processes and subsequently implemented by management. Every activity is a systemic formation with an internal logic and relative compatibility in its elements. Therefore the concept of an activity exists not only as symbolic representations, such as 'lean production', or graphic models of the logic of the system, but also as internal coherence embedded in the structures and daily practices of the activity. As activities develop historically through incremental modification, there are, in many cases, no models or representations of the concept. Explicating it by describing the logic according to which individuals' actions are currently coordinated may therefore be an important step in the transformation process.

The practical activity has to follow one relatively coherent logic to be effective. This coherence is undermined by new elements in the activity system, however, such as a new tool, or a new group of clients that call for or represent a different logic. Such inner incompatibilities and inner contradictions form the zone of construction between the past and future of the activity, and trigger a debate concerning the kind of explicit concepts that could be applied to guide its future development.

Because of the embedded and tacit nature of the concept of an activity and the division of labor within it, individuals taking part may have very different cognitions of its basic structure and logic. L. S. Vygotsky (1986, p 205) distinguishes between spontaneous or everyday concepts and scientific concepts. According to him, "the *absence of a system* is the cardinal difference distinguishing spontaneous from scientific concepts" (emphasis in the original). The lack of system in spontaneous concepts means that contradictory statements can be made without the contradiction being noticed because the systemic relationships are not recognized. This is often the case when people are discussing the activities in which they are involved. The systemic relationships between the elements are hard to grasp without the specific representational means of a systemic concept.

Many new developments, especially the globalization of the economy, the information-technology revolution and increased investment in research and development, have changed the landscape of working life. One of the long-term consequences of improved information and communication technologies appears to be the facilitation of new structures due to lower communication and transaction costs. These new technologies have increased the number of possible business configurations a company can adopt. Firms are increasingly working in partnerships, offering joint value propositions, and building up multi-channel and multi-owned distribution networks. Products as such are no longer the self-evident basis of business concepts, and in many cases are only one aspect and mediator in sustained development-oriented cooperation between specialized firms. Competition between companies is apparently moving from individual products and services to the level of business concepts. The increasing complexity of and variation in business activities means that these activities are becoming harder to grasp and communicate, and there is therefore a need for specific representational tools to depict their systemic structure and logic (Osterwalder, 2004).

3.- The basic dilemma in the transformation of the concept of an activity

Aitken's (1960) historical case study on the implementation of Taylor's Scientific Management in the Watertown Arsenal in 1908-1915 is an excellent analysis of an early intervention aiming at the transformation of the production concept. It illuminates the basic dilemma involved in such a process. Taylor had a very clear perception of the problems caused by the prevailing craft approach to running metal workshops. He realized that these problems were prevalent all over the country. He had developed a concept for a new way of managing workshops that reflected and developed further ideas of systematic management that had been discussed by engineers for many years (Litterer,

1963, Layton, 1986). Taylor's new production concept was also related to a technological innovation: the use of high-speed steel in the bits of lathes and drills. This new material made it possible to speed up the machines to an extent that the experienced craftsmen could not believe possible. The reduction in the time needed to machine a piece further aggravated the problems in controlling and coordinating production that were typical in workshops at that time. The new concept was designed to solve these problems.

From the point of view of Taylor and his colleagues, Scientific Management was a new universal production and management concept that could solve a set of generally prevalent problems. It was part of a broadly shared epistemic object of inquiry and a search for solutions to problems in workshop management through experimentation and theorizing within a growing community of engineers. As such, it could only exist through experiments in local activities and the exchange of their results within the professional community.

One such experiment was the implementation of Scientific Management in the Watertown Arsenal workshop by one of Taylor's pupils, Carl Barth, in collaboration with the local managers. The new concept meant a break in the traditional way of working. The local craftsmen were not involved in changing the production concept in any other way than by applying the new orders they received from the management. Barth and the managers interpreted the local problems in the workshop with the help of Taylor's generalizations concerning the systemic causes of low productivity. They implemented the general principle Taylor had developed and introduced the new tools and organizational arrangements he had proposed. Aitken (1960) describes how the marginalization of the local craftsmen and their knowledge led to problems in the transformation. A contemporary evaluator of the process saw the lack of collaboration with the workers as the main cause of problems in the intervention.

Aitken's case study of the application of Scientific Management shows the basic dilemma in interventions aiming at a transformation of the concept of an activity. On the one hand, such transformations call for questioning the current wisdom and practice, and for the application of new knowledge, technology and ideas that have not, and probably could not have been, created within the local work community. On the other hand, if they are to be successful such interventions have to be based on collaboration with the local actors – whose way of understanding the process and practices is being questioned. The new general knowledge has to be connected to the practitioners' experiences and observations, and enriched and modified through them. The motivation to find innovative ways of applying the new concept has to be elicited in order to implement it successfully.

This dilemma also reflects the general abductive nature of human concept formation. According to Vygotsky (1986, p106), an essential element in this is the functional use of a word, or any other sign, as means of focusing one's attention, and of selecting distinctive features and analyzing and synthesizing them. In this respect concepts are tools for thinking. As such, they develop to a great extent culturally outside of a specific local activity, and nowadays increasingly as a result of conscious research and development and scientific discussion within disciplines. The actors involved in local activities, however, also develop, on the basis of their experiences, their own local concepts as tools for thinking and communicating about their joint activity. Thus, concept formation proceeds as interaction between scientific, in other words systemic, concepts "from above" – or outside – and "everyday concepts" created "from below" on the basis of individuals' local observations and experiences (Figure 2). On the one hand, the systemic concepts serve to organizing the local concepts, and on the other, the local concepts enrich and modify the systemic concepts.

Because of this duality, it is possible for a new systemic concept of an activity to be imposed by the management without the practitioners learning to apply it as an intellectual tool to enable them to think about their everyday experiences, and without it being elaborated and modified on the basis of

local knowledge (point 1 in Figure 2). As a result, the practitioners may continue to deal with problems on the basis of their everyday concepts without elaborating the systemic connections between their observations (point 2 in Figure 2). The solution would be to develop an enriched systemic concept of the local activity that is anchored in practice (point 3 in Figure 2). This requires movement from everyday concepts towards the systemic concept, and its enrichment and interpretation through practitioners' everyday concepts.

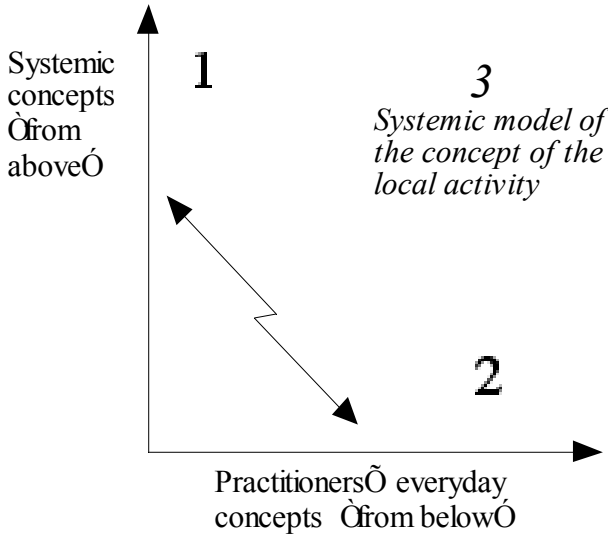

Figure 2.- The basic dilemma in the transformation of the concept of an activity

This duality also manifests itself in the division of intervention approaches into expert-driven and process -centered. Expert-driven approaches are based on a generalized problem definition and a general concept that is implemented in an intervention. Process-oriented approaches, on the other hand, focus mainly on solving problems in the local activity on the basis of practitioners' everyday concepts. It is assumed that the practitioners have all the necessary knowledge, and the interventionist therefore focuses on facilitating their communication and problem-solving processes (Moldaschl & Brödner, 2002; Argyris, 1985; Gustavsen et al.,1996; Schein , 1969, 1987).

According to Barley & Kunda (1992) and Adler (2003), there has been continuous oscillation between the control-oriented (expert driven) and commitment-oriented (procedural and participatory) management approaches. In Adler's view, there is, however, a historical trend towards the integration of these approaches, and towards what he calls collaborative interdependence between management and workers. I maintain, in this article that "collaborative interdependence" in transforming the concept of the activity is increasingly important, and that it is only possible if there is a shared symbol or representation that functions as a means of focusing the involved actors' attention on distinctive features in the activity and its context, and of analyzing them and synthesizing the observations.

Gustavsen et al. (1996) analyzed developmental interventions carried out in Sweden with the financial support of the Swedish Working Life Fund, and found an increasing number they called *concept-driven*: they were based on a specific concept and the aim was to implement it through the transformation of the activity. This kind of transformation of business concepts is a complex process and calls for a vide variety of innovations on different levels of the organization. There is thus also a need for a heterogeneous set of actors to carry out the transformation successfully.

Figure 3, presents a four-field typology of approaches to developmental intervention along two intersecting dimensions, depth of change (transformation vs. improvement) and intervention type (expert vs. process centered). Most current forms of developmental intervention aimed at transformation of the basic concept of the activity are based on an expert-centered approach. There is another alternative, however: the intervention could support the innovative collaborative development of a new concept by the practitioners rather than imposing one. This is only possible by prompting and supporting the practitioners' shared agency in transforming their activity system.

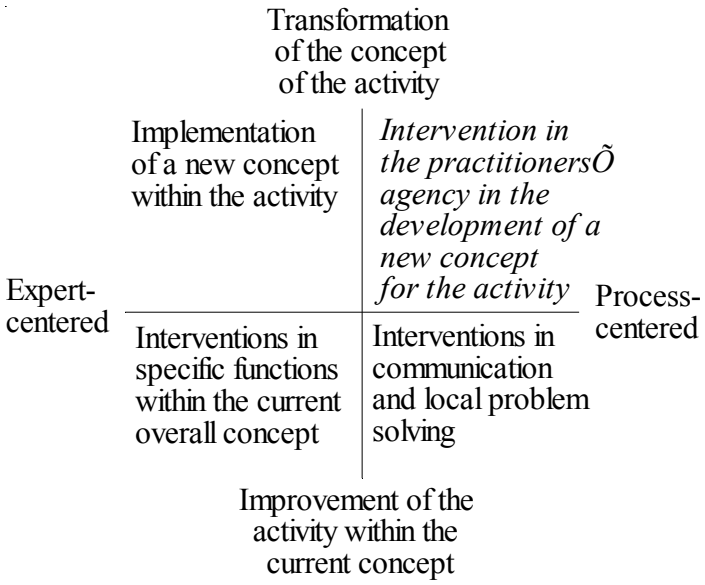

Figure 3.- Types of developmental intervention

In the following section I will consider the dilemmas and problems involved in directing the practitioners' attention to the concept of their activity and supporting the development of transformative agency within a work community.

4.- Building shared transformative agency in a developmental intervention

Developmental Work Research (Engeström, 1987, 2000, 2005b) is an interventionist methodology that aims at prompting and supporting practitioners' agency in analyzing and transforming the system of their joint activity. Agency here means breaking away from the given frame of action and taking the initiative to transform it. According to Bandura (1989, p.1175-1177), agency depends on actors' beliefs about their capabilities of exercising control over what is going on. Belief in self efficacy is not the developmental starting point, however, and external artifacts play a crucial role. As Vygotsky has shown, "The development and use of artificial stimuli play an auxiliary role that permits human beings to master their own behavior, at first by external means and later by more complex inner operations" (Vygotsky, 1978, p. 73). People develop and use external artifacts to reach a redefinition of the situation and to control their own actions. They do so, however, not as isolated individuals but as members of a community. A number of individuals can collaboratively develop and use a shared artifact to enable them to redefine their situation and to master their joint actions in transforming the context of their daily work.

The idea in Developmental Work Research intervention is to organize, support and guide practitioners' expansive learning activity and thereby to support the building of shared transformative agency. According to Engeström (1987, p.125-127), learning activity is a transitory, intermediate kind of activity between science and work. The object of this activity appears to the subject first in the form of discrete tasks, problems and actions within his or her current productive activity. Practitioners engaged in collaborative learning analyze these and connect them with their systemic activity context, transform them into inner contradictions within the system demanding creative solutions, and expand and generalize them to a qualitatively new activity structure within their societal productive practice. This is accomplished by means of models that enable the actors to map the essential relations involved in the activity they are analyzing and developing. A more general instrument – or model-making methodology – facilitates the construction of the models. Figure 4 shows the structure and essential quality of learning activity, namely its transitional and expansive character.

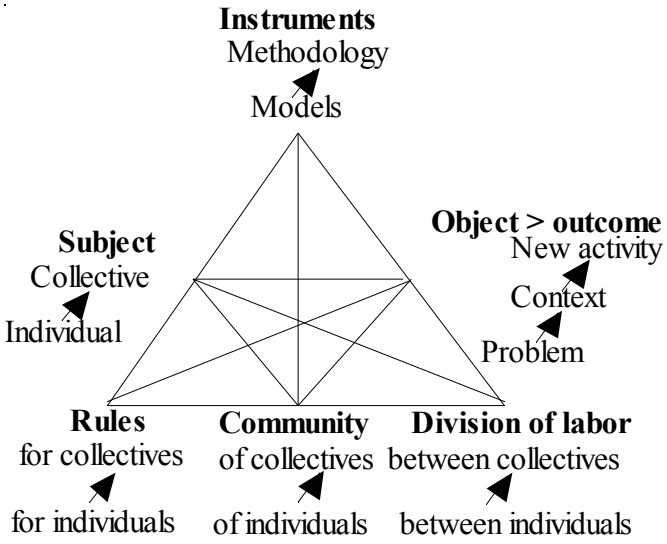

Figure 4.- The structure of learning activity

There are two major transitions in learning activity, one from individual actions to the analysis of the activity system, and the other from the current form of the activity system to a new form. Practitioners' first step in breaking away from the prevailing concept of their activity is to distance themselves temporarily from the productive work and to take the analysis and transformation of the system of the productive activity as the object of their collaborative inquiry. Through this inquiry and development process they then design and implement a new concept for their activity, which helps them overcome pressing developmental contradictions in the prevalent system.

Like any activity, learning activity is also carried out through individual coordinated actions that build on the results of previous actions. Engeström (1999) identified seven types of learning actions that are necessary in the expansive transformation of the concept of an activity. These actions form a progressive sequence in which the earlier actions make the latter ones possible even though there is constant movement back and forth in the cycle (Figure 5).

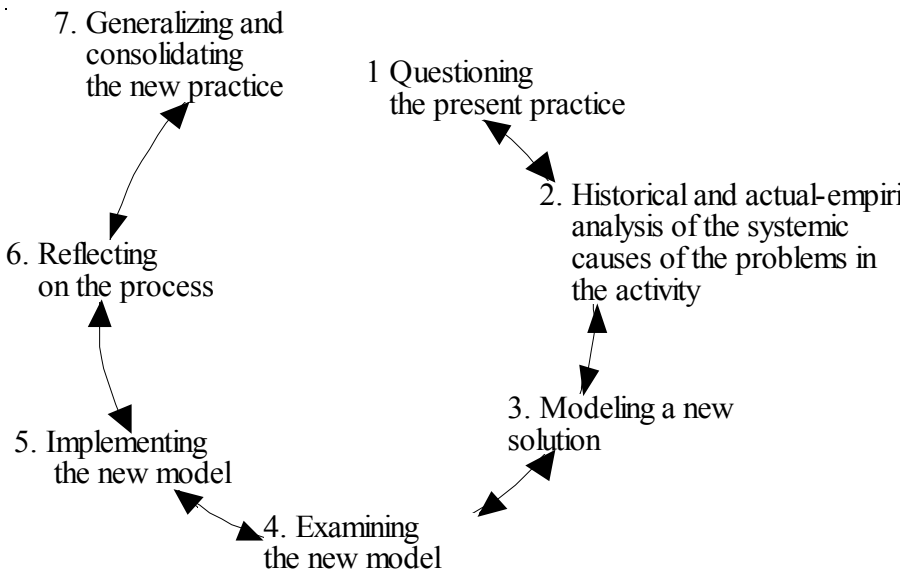

Figure 5.- The prototypical sequence of expansive learning actions

The Change Laboratory (Engeström et al.,1996) is an intervention method for prompting and guiding practitioners' expansive learning activity, and an instrumentality facilitating the taking of expansive learning actions, first with the help of an external interventionist. It is an application of the method of double stimulation that Vygotsky used in his studies of child development:

> "The task [first stimulus] facing the child in the experimental context is, as a rule, beyond his present capabilities and cannot be solved by existing skills. In such cases a neutral object is placed near the child, and frequently […] the neutral stimulus is drawn into the situation and takes on the function of a sign [psychological tool]. Thus, the child actively incorporates these neutral objects into the task of problem solving. We might say that when difficulties arise, neutral stimuli take on the function of a sign [psychological tool] and from that point on the operation's structure assumes an essentially different character (Vygotsky, 1978, p. 74)".

The task, or the first stimulus that 'is beyond the actors present capabilities', is produced in the Change Laboratory by collecting first-hand empirical data on problematic aspects of the activity. This data may comprise difficult client cases, descriptions of recurrent disturbances and ruptures in the process of producing the outcome, and accounts of double-bind situations the actors experience in carrying out their daily work. It is collected in the form of video recordings, interviews or observation diaries for example. The researcher-interventionist selects specimens of the current object of the activity and the current practice to be used as a 'mirror' for the practitioners and analyzed jointly in the intervention sessions.

As a neutral secondary stimulus that could become a sign and intellectual tool for the practitioners the researcher provides the general model of an activity system (see Figure 1) and a model of the expansive cycle of an activity (Engeström, 1987, p. 322). The general model facilitates the modelling of the current concept of the activity by characterizing the essential features of the elements of the system. The systemic causes of the recurrent disturbances and the problems, the practitioners experience in carrying out their daily activities can be identified by specifying important qualitative changes in the elements of the system and the inner contradictions between the elements that these changes have caused. The model of the local activity system and its inner contradictions can be further used to assess the opportunities for change in the system and for creating a new concept for it,

as well as for examining the feasibility of this new concept by making thought experiments about its application in various situations. In this way the practitioners can create a shared symbolic artifact for themselves that helps them to break away from their current way of thinking and acting, and to begin to transform the activity system collaboratively through experimenting with new tools and new kinds of productive actions.

The external researcher-interventionist in a Change Laboratory prompts and supports the practitioners' expansive learning actions by preparing corresponding tasks for them that include the mirror material and analytic and synthetic concepts to be used in performing the actions. The interventionist also facilitates multi-voiced, exploratory discussion in the sessions. The intervention is designed as an intensive and compressed learning-activity process within a local activity. It typically comprises about ten well-prepared two-to-three-hour sessions once a week, a period of experimenting with a new prototypical way of representing the object of the activity and the related new tools and ways of acting, as well as a set of sessions for evaluation, modification and further development of the new concept and tools.

5.- Dilemmas in forming the learning activity and building transformative agency in a Change Laboratory intervention

When Vygotsky's method is applied in the joint activity of a work community, the process of double stimulation becomes more complicated. In the course of supporting the practitioners' learning actions in the intervention, the basic dilemma in transforming the concept of an activity (see Figure 2) manifests itself in the form of a number of more specific dilemmas. Some of the most typical examples are discussed in the following.

5.1.- The dilemma between the understood (only) motive for developing the activity and effective motives for solving acute problems

Although members of the work community can take part in a Change Laboratory intervention and understand and accept the idea of analyzing and developing the activity system, this does not mean that they are interested in it and personally motivated. A. N. Leont'ev (1978, p128) makes the useful distinction between an intellectually understood motive and an effective motive. We can understand and accept the motivation for an activity and the idea of what we should do without this understanding becoming an effective motive that directs our choices and actions. An effective motive is one that directs the attention and pushes one into a certain kind of action. The first step in Change Laboratory intervention is to transform the intellectually understood motivation for developing the activity system into an effective motive, interest and involvement in the learning activity. This means that the analysis and development of the activity system has to become a personally meaningful object and an effective motive for the practitioners. It is also the first step in the development of transformative agency.

At the outset of the intervention, the participants typically have in mind numerous problems and defects in their work that they want to put right, and an idea of how to do this. As they come to the first sessions they may thus already have effective motives for developing the activity, but these problems are also typically defined narrowly from the individual perspective, and the participants have quite different ideas of what the key problems are and how to solve them. The challenge in the intervention is to transform these initial problem definitions and effective motives for solving specific problems into a genuine interest in analyzing and developing the activity system.

The vertical axis in Figure 6 represents the participants' intellectually understood motives for taking part in the intervention and taking actions of analyzing and developing the activity system that

might, however, not be effective in terms of getting them intensively involved in the analysis and development process. The horizontal axis, on the other hand, represents their effective but narrow-ranging motives for immediately solving some specific problems in their activity. The challenge at the beginning of the intervention is to create an effective motive for an involvement in analyzing the systemic causes of recurrent daily problems instead of searching for an immediate solution to specific individual problems.

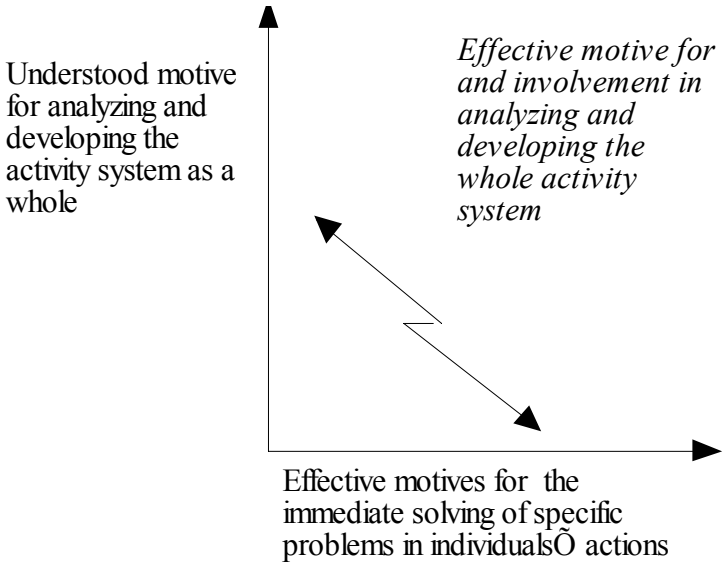

Figure 6.- The dilemma between understood and effective motives for developing the activity

The following excerpts from a Change Laboratory session involving a TV production team are taken from a discussion that followed the presentation of disturbances and ruptures in communication that had taken place in a recent live broadcast. The participants had accepted the idea of analyzing the activity and developing its form, but nevertheless they did not wish to engage in analyzing concrete disturbances (they represent the upper-left corner in Figure 6).

> P1. I feel that bringing out these problems is kind of artificial. Each year we have done tens of programs and they haven't been experienced as problems. We make the programs and they get broadcasted in time, and there will always be problems however well planned or well done they are.
>
> P2. So then, the end result [in the disturbance process] was OK after all and therefore I came to the conclusion that we're making too big a deal out of this because there will always be mistakes.

Here the question was, whether the disturbances and problems presented as the first stimulus in the intervention were important enough to call for further inquiry. There may well be more to the reluctance to look into the causes of the disturbances than avoiding overreaction to an occasional disturbance. Many theoretical explanations for such unwillingness have been given. It could be part of a *defensive routin*e maintained in the community to protect members from losing face (Argyris, 1985). Emphasis on the impossibility of avoiding mistakes could be a *myth* created and maintained in the community to make life tolerable in spite of the disturbances because the practitioners do not see any possibility of changing the situation (Wodak, 1996). It could also be part of a collective attempt to keep up a facade of effectiveness in response to a collective threat (Engeström & Mazzocco, 1995), or be indicative of the difficulty in changing orientation from production and result to lear-

ning (Wertsch, 1985, 213). Whatever the reason, the learning activity cannot start before there is interest in analyzing the disturbances and problems in the daily activity.

The effective motive for analyzing and developing the activity system stems from the recognition of disturbances, problems and new opportunities that cannot be dealt with on the level of individual action. Multivoiced discussion in the intervention sessions is helpful in questioning existing narrow problem definitions and revealing the systemic context of the problems individuals' experience in their daily work. The external researcher-interventionist can help practitioners to develop an effective motive for learning actions by turning the focus of attention to the object and outcome of the joint activity by presenting mirror data that makes the object and current problems in mastering it visible and gives the object a voice. A client's story about how his/her needs were met in the activity would be one example of such a mirror.

5.2.- The dilemma between emotional involvement and detached intellectual analysis

Accepting the existence of and encountering problems do not, as such, create an effective motive for looking into the developmental challenges of the activity and transforming it. A natural alternative for practitioners is to ascribe the causes of the disturbances and problems to individual behavior. The interventionist is thus also faced with the dilemma of balancing the emotional encountering of problems and individual involvement with distanced intellectual analysis of the activity system. Encountering the problems without the balancing intellectual analysis of the system and the taking of distance easily leads to unfruitful moralizing and ascribing blame to individuals. On the other hand, distanced intellectual analysis of the system without concomitant emotional involvement easily leads to hypothetical talk and speculation that remains isolated from the actors' motives and action, and thus does not build up agency in transforming the activity system. As Spinosa et al. (1997, p 24) note, the best way to explore disharmonies is through involved experimentation rather than detached deliberation.

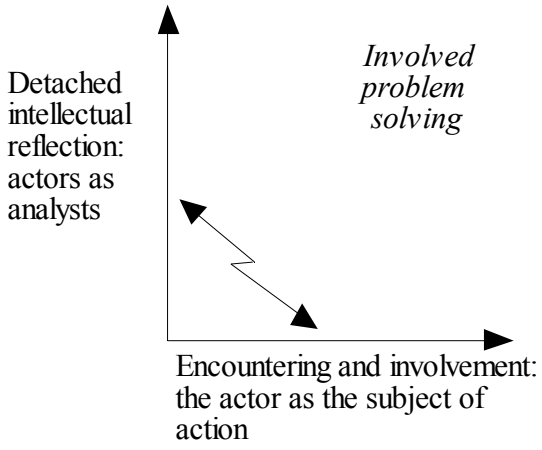

Figure 7.- The dilemma between detached intellectual analysis and encountering and involvement

In some cases one person's strong emotional involvement in a problem situation and a tendency to moralize may prompt other members to engage in a balancing intellectual analysis of the situation in the discussion in a Change Laboratory session. This was the case in the following excerpt from a Change Laboratory process in the domestic news department of a daily newspaper (Figure 8.) The

turns of talk are abbreviated and their contents are divided into those that deal with the structure of the activity system, individual action, and the concrete situation that acted as a mirror of practice. This way of presenting the discussion brings out the dynamic movement between emotional encountering and detached analysis. The discussion started with the recognition of a major chain of disturbances the previous evening that became the mirror of the current practice. A, who was in a managerial position in the unit, felt responsible for the disturbance, became emotionally involved and blamed herself and the supervisor. The other participants reacted by finding reasons for the problem through analyzing the structure of the activity system. The movement of the topic from the level of individual to that of the activity system is punctuated by utterances starting with expressions such as 'on the other hand', 'but' and 'no'. As a result of the discussion, participant C reformulated the problem as related to the copy editors' focus and priorities, and the group started to analyze the structure of their division of labor.

Moving from an emotionally laden concrete situation directly to modeling the activity system can be demanding for practitioners. An intermediate intellectual tool could therefore be used to help them to analyze the context of the problems on a more concrete level. Ahonen used a graphic map of a concrete work process, including all the 'surprises' the actors encountered during it as a mirror of practice. This kind of mirror provoked the participants into relating their own emotionally-laden similar experiences, and led them also to observe connections between the problems and various elements of the activity system (Ahonen et al., 2000, p. 295).

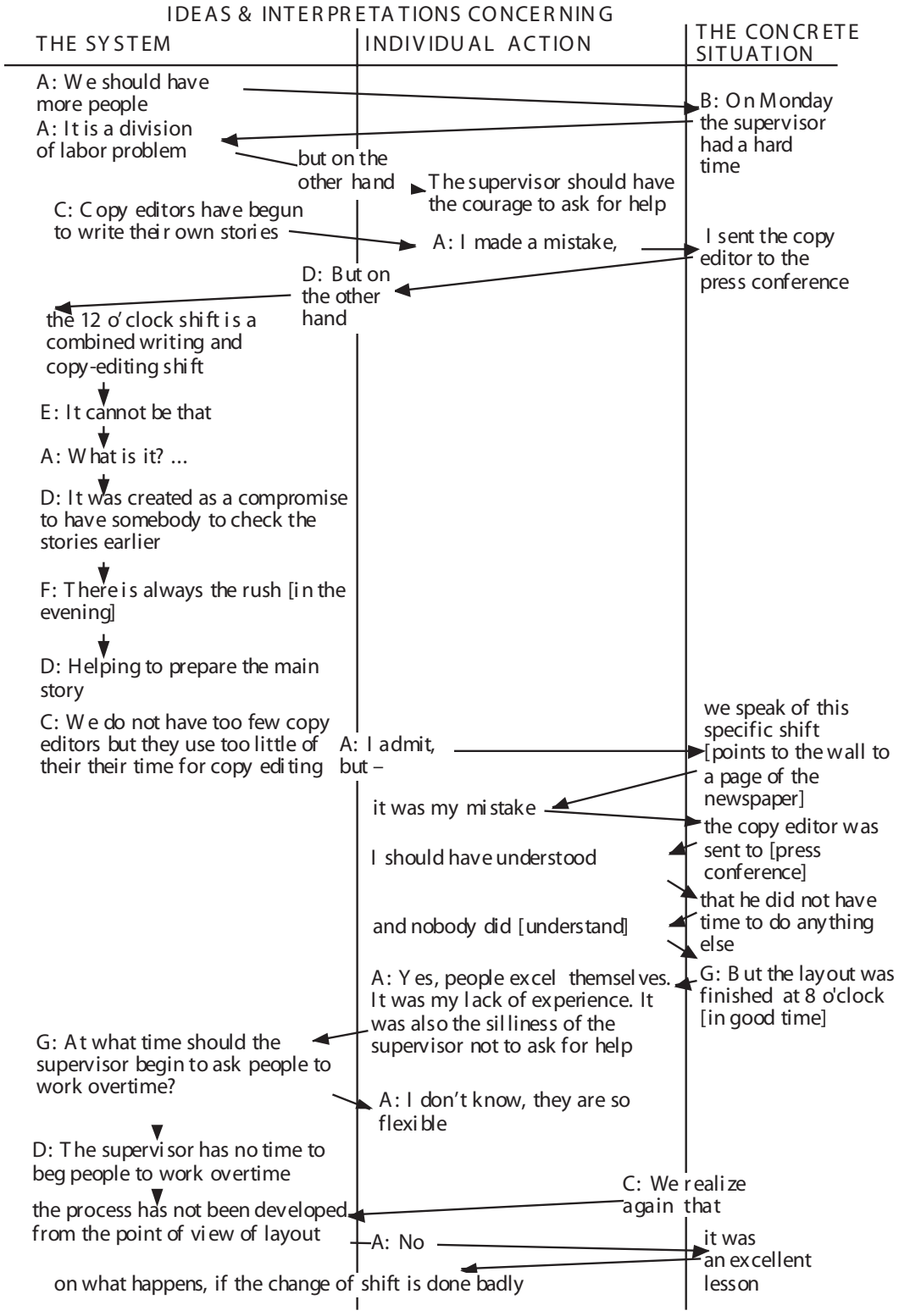

Figure 8.- Dynamic interplay between the individual and the system perspective

5.3.- The dilemma between applying the old concept for solving problems and finding a new concept for the activity

The establishment of an involved joint problem-solving process is an important step in starting the learning activity. Nevertheless, practitioners naturally first try to reach a solution by applying the prevailing approach to solving problems of that kind within the activity. The dilemma is between following the old way and questioning the current wisdom. The interventionist can help the practitioners to recognize the limits of the current concept and practice by encouraging them not to take the first solution that is produced in the discussion, but to look closely at its feasibility and capacity to eliminate the type of problem that triggered the process. Once they recognize that the old principles and concepts do no longer function they may begin to question them and to search for a new perspective that could lead them to a new concept for the activity.

> The discussion in the Change Laboratory in the domestic news department described in Figure 8 led to a lengthy process of problem solving in which the participants attempted to find a better way of dividing labor by changing the times the individual editors' shifts would start and end. In the end, one of the participants questioned the principle of dividing work among individuals in the traditional way because it led to an excessive need for transferring work from one person to another. He proposed that the responsibility for setting the pages would be given to a team of editors who would organize their work themselves instead of ascribing fixed roles. This started the development of a new team–based form of editorial work.

In the example above the developmental process unfolded in two phases. In the first phase the group questioned the current way of organizing the work and started to search for an alternative, although still applying the prevailing principles of fixed roles and individual responsibility. Only after the group became frustrated in its attempt to find a solution were these principles questioned, and a new principle, team-based organization, was taken as the starting point for solving the problem.

> It was acknowledged in the Change Laboratory in the client service of an insurance company that there was a problematic rush on Monday mornings because many clients came in with their compensation claims. The firm had recently adopted a new client–service practice. All those in contact with clients were expected to deal with any request a client had and to get support from a new computer system. When discussing how to deal with the Monday rush, however, they suggested that some of them could specialize in taking compensation claims, which would enable them to develop an effective routine and be therefore able to deal with a greater number of cases. They therefore decided to experiment with this kind of specialization. It was soon recognized, however, that the variation in the amount of clients and the versatility of their errands was too great to be managed effectively in this way.
>
> The firm had a long history of dealing with an increasing work load through specialization. It had, nevertheless moved from a product-based to a solution-based business model whereby it provided overall safety solutions rather than isolated insurance-policy products. In order to implement this model the client servers had to master a whole range of insurance matters. The principle of computer-supported broad service competence was still so new that, instead of trying to solve the immediate problem by elaborating on it, the participants regressed to the old principle of narrow specialization – only to find once again that it was no longer effective.

As these two examples show, it is hard for practitioners to identify and conceptualize the principle according to which the work is organized, and to question not only individual instances of its application but also the principle behind them. The underlying principle behind the work organization can only be made visible through a historical analysis that highlights changes that have taken place in the activity and shows how the same activity has been organized along different lines over the years. This kind of historical analysis helps practitioners to identify the current concept and at the same time to see that it is not the only possibility. It also then helps to identify elements of the activity system that have changed and made the prevalent principle inadequate. The general model of

the activity system can function as an intellectual tool for this explication, and for modeling the earlier concept of the activity and the evolved inner contradictions in the system's current form.

5.4.- The dilemma between a visionary model and concrete experiments and experiences

Elaborating a hypothesis of the systemic causes of problems in daily activity is a major turning point in the development of transformative agency in that it moves the object of attention and inquiry from isolated problems to the broader question of finding a way to overcome the developmental contradictions within the activity system and developing a new concept. Overcoming the internal contradictions in the activity system becomes the object of the practitioners' collaborative inquiry and development activity.

As Vygotsky (1986, p.107) notes, the existence of a problem or goal does not suffice to start the concept–formation process, even though they are necessary prerequisites. There is also a need for some kind of symbol to help practitioners focus their attention and to direct them in the development of the new concept. A model of the systemic causes of recurrent problems in the daily activity expressed as inner contradictions within the activity system, and an initial idea or hypothesis for a new concept, could function as the kind of symbol Vygotsky means. They would thus become the basis of the practitioners' sustained and involved search and experimentation to create the required new concept and form for their activity (Miettinen & Virkkunen, 2005).

A variety of sources could be used in developing a hypothesis for devising a new form of the local activity. Analyses of clients' changing needs would help reframing the problems. Reviews of more advanced forms of the activity and the scientific discussion concerning that kind of activity could provide useful concepts and models. Practitioners' individual innovative solutions could also be an inspiration in this process. The search for a new concept typically produces unrelated and partly contradictory ideas at first. Synthesizing a new concept calls therefore for a sustained multi-voiced process that involves both thought experiments and practical experimentation. R. Normann (1977) describes such a process as 'visionary down-to-earth planning', in which an abstract idea or vision and concrete experiments are made to interact and test each other. Engeström et al. (2005) note that concept formation could have the character of 'filling in' a chasm between an abstract scientific concept handed down from above and practitioners' everyday concepts that reflect the current situation, as well as of working out a resolution of contradictions between competing conceptualizations. Fujimoto (1999) described how the dilemmatic explication of two contradictory objectives functioned as a guide in the search for a new production concept. In a similar way, Nonaka and Takeuchi (1995) describe the first phase of the development of a new product concept as a paradoxical utterance that combines two contradictory objectives. These are actually different ways of representing an open epistemic object with its inevitable characteristic, irreducible vagueness because, paradoxically,

epistemic objects embody what one does not yet know and what has to be learned (Rheinberger, 1997, 28).

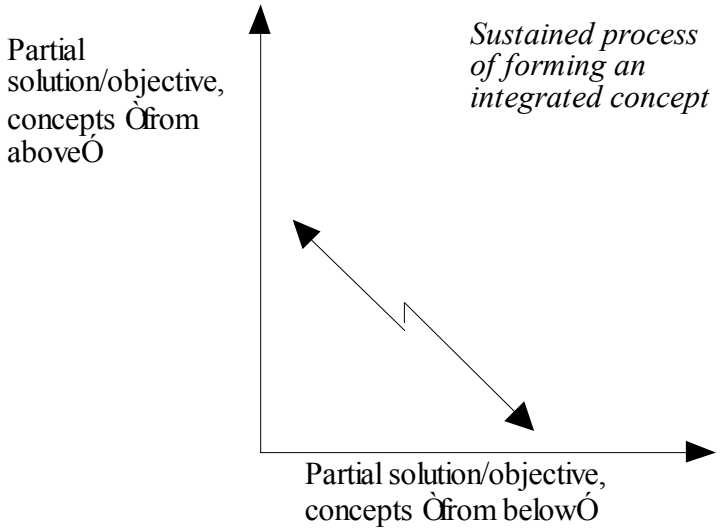

Figure 9.- Dilemmas between the contradictory elements of a new concept

Engeström (1987, 286-296) suggests three types of tools that could support the search for a new concept and the expansive transition: springboards, models and microcosms. *Springboards* are facilitative images, techniques or socio-conversational constellations (or combinations of these) misplaced and transplanted from some previous context into a new, expansively transitional activity context during an acute conflict of a double-bind character. A springboard typically has a temporary, situational function in the search for a solution to the double bind. Various kinds of *models* are needed, primarily to envision and project the evolving object and motive of the new activity. *Microcosms* are miniatures of the community upon which the new form of activity will be based. In some cases the tools used in Change Laboratory intervention function as springboards for creating the new concept.

> In a Change Laboratory intervention carried out in the mail-delivery organization of Finnish Post Ltd. the postmen prepared an interview with small and medium-sized firms to inquire into their needs for postal services and their views concerning the existing service. These firms had customarily been seen as recipients of mail. Their problems and needs in terms of sending mail had not been recognized. This interview led the postmen into a new kind of interaction with these clients, which later resulted in a reconceptualization of the object of postmen's activity and the creation of a new service concept (Pihlaja, 2005).

5.5.- The dilemma between expansion and regression

The first applications and concretization of the new concept in the activity system leads to contradictions between the old and the new forms of the activity. These contradictions call for adjustments that may vary substantially in terms of the further development of the new concept. In this phase there is the dilemma between expansive further development of the concept and its concrete applications, and the watering down of the new idea (Figure 10).

> Reijo Miettinen (1993) followed how teachers applied a new approach to the collaborative planning and carrying out of vocational training over the boundaries of traditional disciplines. In his follow-up he found a variety of applications ranging from giving new names to elements of the old practice to the active further development of the new concept.

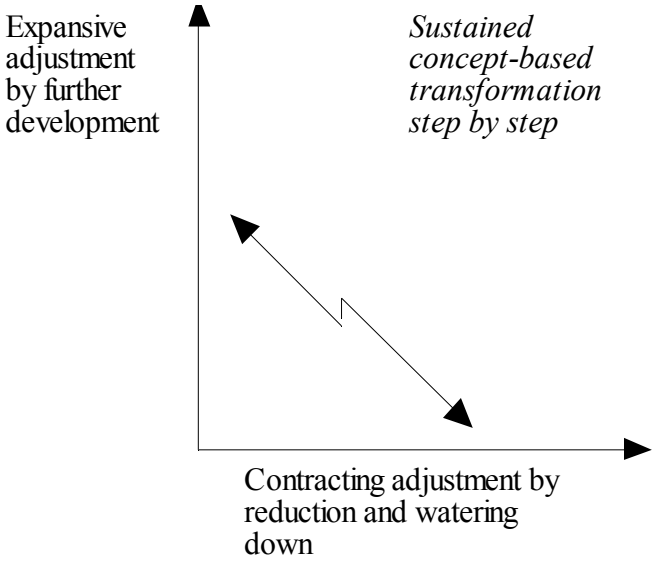

Figure 10.- The dilemma between expansion and regressive adaptation in the implementation of a new concept

6.- Broadening the social support for transformative agency: an intervention in intervention

There is remarkable fluctuation in the need for and the possibility of developing new forms of activities in organizations. The most appropriate forum for developing a new concept for a type activity and for promoting transformative agency is thus not one organization or work community but a broader community of actors engaged in similar activities. There is an objective basis for forming such communities in the current historical transformation of working life. As Rosenberg noted (1963), when the same technology is used in different local activities, problems and solutions related to its use are also common. This does not only concern technology in a narrow sense, but also applies to concepts of carrying out activities. Because technologies, theories and business recipes spread within industries, local activities in the same or even in different industries are often based on the same basic concept with minor modifications. The activity concepts prevalent today in many areas are still based on principles and solutions that evolved during the long post-war period of the development and spreading of the principles of mass production. The change in the dynamics of industrial development in the current period of the global information economy has now brought many of these concepts to crisis point. There is therefore an increasing need to create and transform the concept of an activity system in many industries.

Karl Marx (1971, 104) drew a distinction between universal and co-operative labor. Co-operative labor involves the direct co-operation of living individuals. All scientific labor, all discovery and all invention is universal labor, which depends partly on the co-operation of living individuals and partly on the utilization of the labors of those who have gone before. Traditional forms of direct co-operation between individuals within organizations and professional communities tend to compartmentalize the co-operation in ways that hinder the effective development and elaboration of new activity concepts, because the new concept as an epistemic object of inquiry and development typically exceeds the boundaries of traditional social divisions and calls for a multi-voiced dialogue between persons with different backgrounds and positions. The challenge in creating a new concept cannot be met without broadening the co-operative labor in the direction of universal labor and

including the temporal dimension in the form of scientific activity. The development of new concepts for activity systems requires a kind of community that unites scientific research and the experimental development of new concepts in several local organizations.

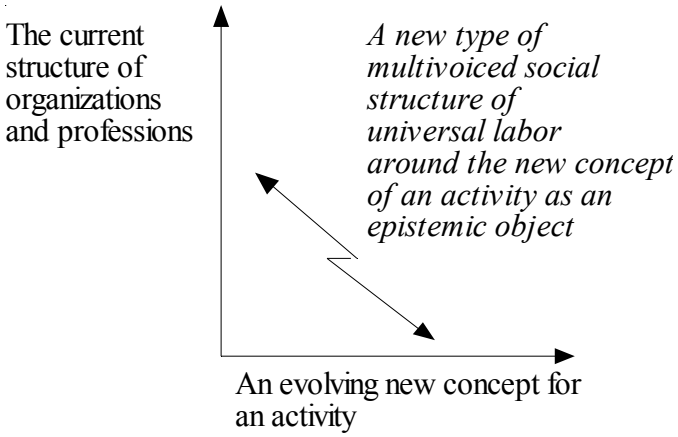

Figure 11.- The dilemma between existing social structures and the kind of social structure needed in developing a new concept for an activity

Since 1996, researchers at the Center for Activity Theory and Developmental Work Research have been implementing Change Laboratory interventions in many organizations, and have helped practitioners to take major steps in the expansive development of their activity. Many projects have also involved the creation of a new concept for the activity system. A new kind of shared agency in developing the new concept and transforming the activity starts to evolve among practitioners during local interventions, but it tends to disappear after the first step in the transformation of the activity has been taken and the external interventionist has left. Because the responsibility and power to develop the business activity is often dispersed among functionally specialized units and specialist personnel, it is hard to create and sustain shared transformative agency that crosses vertical and horizontal boundaries in the current organizational structure. Those whose collaboration is needed are located in different units and represent different professional cultures and levels of authority. The sustained development of the new concept of an activity is therefore often difficult, despite high-level management support. These observations highlight the fact that the transformation of a concept of an activity system involves not only the productive activity, but also management and development structures.

In order to support the further development of new concepts researchers at the Center have been training practitioners to use the Change Laboratory method as internal change agents within their organizations. The Change Laboratory method has helped these people to break away from their traditional roles and to involve themselves in supporting expansive learning in various units of their organizations. Most of those who have been trained are not full-time professional developers but employees normally engaged in various productive or supervisory tasks or in middle-management positions – such as nurses and head nurses in hospitals, or supervisors in a retail chain. They occasionally leave their normal duties in order to carry out a Change Laboratory intervention in a work community within their organization, after which they return to their normal duties. Professional consultants in two consulting companies have also been trained to use the methodology in their normal work. Since 1996 this kind of network of internal developers has been set up in eleven organizations in public administration and private business.

The networks have disintegrated in six of the organizations. The main reason in three of these cases was a major change in management and managerial strategy, in another two it was apparently because the new form of developmental work had no place in the organization and did not attract enough management support, and in the last it was because the specific transformation project with which the developers were associated came to an end. The network is still working in the remaining four organizations. In two of these, the Change Laboratory method is used for internal development within a heterogeneous organization without any unifying concept of a specific productive activity. Finally two occupational-health-care units use the method as a springboard in searching for a new concept for occupational health care by involving their specialists in the change processes in their client organizations.

As mentioned above, in some cases the trained change agents clearly focus on the development of a specific new concept for a specific productive activity, such as occupational health care. In some cases the emphasis is more on introducing a new approach to internal development activity, and the change agents work with different transformation processes in a heterogeneous set of units. Combining these two dimensions produces the four fields shown in Figure 12.

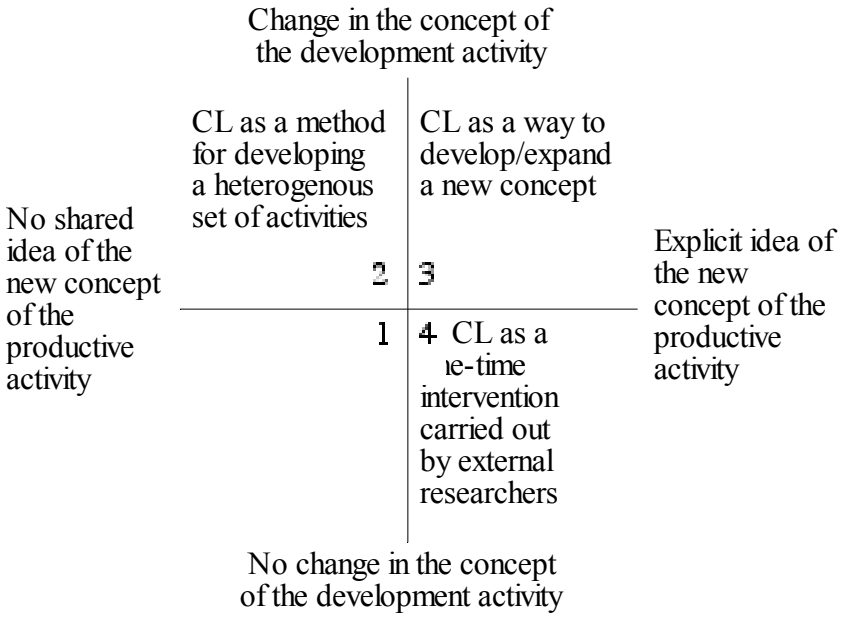

Figure 12.- Different ways of applying the Change Laboratory method

The second quadrant in Figure 12 describes cases in which the method has been taken in use in organizations engaged in a heterogeneous set of activities involving different concepts. In these cases the internal change agents help the different units to develop various new concepts for different types of activities. As the activities differ considerably, there is no common new concept that could become a shared epistemic object of inquiry and development. This is the case in a municipality in which the developers carry out Change Laboratory interventions in the various service sectors, and in a consulting firm operating in different kinds of organizations. These developers need support in transforming the development activity within their organization, and in using the methodology.

The third quadrant in Figure 12 represent cases in which the Change Laboratory method is used for the development and implementation of a new concept in a specific type of productive activity. This is the case, for instance, in a set of occupational-health-care units engaged in the collaborative development of a new concept for their activity, the basic generalizations for which have been developed

in a combination of scientific research and practical experimentation (Mäkitalo, 2005). In such a case, the new concept of the productive activity can become a shared epistemic object of inquiry and development for the developers and practitioners in different units, and there could be further cumulative development of tools and ideas for its realization.

The fourth quadrant in Figure 12 refers to one-time intervention projects carried out by external researchers in order to help practitioners to develop a new concept for their activity, or to take a major step forward without training people from the client organization to use the method independently and continue the process. In these cases the further development of the concept in the local activity depends on the transformative agency of the participants and the viability of the new concept and tools created. The results of these projects have typically been analyzed and published in scientific and professional publications (Engeström, Engeström & Vähäaho, 1999; Virkkunen & Ahonen, 2004).

The Center for Activity Theory and Developmental Work Research launched a new interventionist research project in 2004 to investigate the possibilities for supporting, through a network of collaboration, developers in different organizations to use Change Laboratory method for participatory development of new activity concepts. As part of this experimental project we have created an Internet platform comprising condensed presentations of the theory and methodology, descriptions of a number of specific developmental tools and concepts that have been used in Change Laboratory interventions, descriptions of members' cases, a discussion channel, and an e-journal. Developers with the appropriate training may join the network and share ideas and experiences, as well as ask questions and seek advice from fellow network members. As part of the process, meetings to discuss the theory and concrete cases are arranged for the membership, which comprises academic researchers and internal change agents working in various organizations.

We are using this experimental network to study the possibilities of creating a new type of social structure for supporting the collaborative development of new activity concepts. The collaboration incorporates both general methodological questions and the exchange of methods, as well as the development of specific new concepts. This includes the scientific analysis of the historical development of the kind of activity and theoretical work that supports the development of a new concept. A prerequisite for successful collaboration concerning specific concepts is that the specific need for and possibility of a new concept for an activity becomes a shared epistemic object of inquiry, experimentation and development between developers in different organizations within the same industry. In our experimental network intervention we are looking at the possibilities for supporting this kind of object construction.

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Resumen

Por varios motivos mayores, debidos a la revolución tecnológica y de las telecomunicaciones, existe una demanda creciente de transformaciones cualitativas en las actividades de negocios que involucran el desarrollo y la implementación de conceptos totalmente novedosos. Tradicionalmente éste tipo de proceso de intercambio se ha desarrollado gracias un nuevo modelo pre-existente impuesto de arriba hacia abajo. Sin embargo, este enfoque no estimula para nada las iniciativas locales o la creativa experimentación, necesaria para las transformaciones complejas. Por lo tanto, resulta necesario un método de intervención que permita a quiénes lo practican no solo aplicar un nuevo concepto dado al transformar su actividad sino, también, analizar la necesidad de cambio y desarrollar e implementar un nuevo concepto que permita enfrentar los desafíos actuales. Esto requiere romper con determinados marcos de acción y tomar iniciativas que los transformen en un modo colaborativo. El laboratorio para el Cambio (Change Laboratory) es un método de intervención específicamente diseñado para promover y apoyar a éste tipo de agencia de transformación compartida. Varias etapas deberán cumplirse antes de que una comunidad de trabajo pase de ser un conjunto de individuos actuando independientemente a una colectividad sujeta a un esfuerzo de transformación sostenido. Este artículo describe algunos de los mayores dilemas que

implica la construcción de agencias de transformación compartidas, basándose en la experiencia desarrollada a través de intervenciones por el Change Laboratory en varias organizaciones. También, se comentará la posibilidad de crear una colaboración organizacional transversal para desarrollar un nuevo concepto para un cierto tipo de actividad.

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