▫ **ELBESHAUSEN HANS** *(Copenhagen, Denmark)*

CULTURES OF KNOWLEDGE AND EXPANSIVE LEARNING IN A RUN-AWAY-WORLD

АНОТАЦІЯ

Інформація та знання широко використовуються як ключові конструкти для аналізу постіндустріального суспільства, що розвивається. На відміну від макро-оріентованих концепцій пропонується аналіз трансформаційних змін суспільства на мезо рівні теорії культурно-історичної діяльності. У статті розглядається теорія культурно-історичної школи, співпраця на рівні когнітивного включення суб'єктів діяльності, об'єкти що не контролюються. Використовуються та обговорюються поняття «корінне дослідження» та «експансивне вивчення», що відображують умови підвищення ролі «знання» в суспільстві та його вплив на діяльність та пізнання.

Ключові слова: *теорія діяльності, експансивне вивчення, об'єкти що не контролюються, культура знання.*

АНОТАЦИЯ

Информация и знания широко используются как ключевые конструкты для рассмотрения развивающегося постиндустриального общества. В отличие от макро-ориентированных концепций предлагается анализ трансформационных изменений общества на мезо уровне теории культурно-исторической деятельности. В статье рассматриваются теория культурно-исторической школы, сотрудничество на уровне когнитивного включения субъектов деятельности, неконтролируемые объекты. Используются и обсуждаются понятия «корневое исследование» и «экспансивное обучение», отражающие условия повышения роли «знания» в обществе и его влияние на деятельность и познание.

Ключевые слова: *теория деятельности, экспансивное знание, неконтролируемые объекты, культура знаний.*

SUMMARY

Information and knowledge are widely considered as crucial for the coming of the post-industrial society. This article, unlike macro-oriented concepts, attempts to describe the social change on a meso level. Based on activity theory of the cultural-historical school, terms such as collaborative knotworking, run-away objects and expansive learning will be discussed in order to assess the role of knowledge and learning in late modernity. It is argued that knowledge and information can't be grasped satisfactory from a technological or quantitative angle only. Instead, it's proposed to define these terms by means of the concept of knowledge cultures. Subsequent terms like radical exploration or expansive learning will be deployed too.

Keywords: *Activity Theory; Expansive Learning; Run-Away-Objects; Knowledge Cultures.*

Introduction

In the last third of the previous century, numerous social scientists have increasingly dealt with transformation-processes mostly in Western societies. Scholars and philosophers with a socialist background like Cornelius Castoriadis or Jürgen Habermas, liberals as Alain Touraine or neoconservatives like Daniel Bell tried to pinpoint social change, cultural disruptions and political developments in late capitalism. They focused primarily on questions like, how one can get to the heart of different aspects in transformation processes in modern societies and which terms and concepts are particularly useful to depict social change in an appropriate way. It became obvious that the impact of the experienced changes needed to be articulated in a new way. But terms like post-industrial or post-modern show, at best, that the scholarly discussion mainly was dealing with the phenomenon transition.

In accordance with those concepts and discussions, it can be assumed that scientific knowledge has become a main driving force in information society. Accordingly, knowledge experts and symbol analysts are considered as the new elite in the work hierarchy of the information society. Especially the so-called ICT revolution has led to the assumption that mainly technological forms of knowledge constitute new strategic resources for social change. However, there are slight differences in the concepts of information and knowledge. Information is primarily associated with technology and data processing; i.e. information provides only the basis for the social process of sense-making. In contrast, knowledge is mainly understood as a cultural framework, in which information becomes vital. Stehr (1994) for example defines knowledge as a capacity for action, meaning only knowledge allows individuals, groups or institutions to act

in a reasonable way and in accordance with information available.

Although knowledge and information has been considered a major resource for social change scholars couldn't reach consensus on whether the exorbitant increase in information already fundamentally has changed the organizational principles of the modern society. Scholars like Bell (1979), Drucker (1993) or Stehr (1994) are convinced that the changes are both fundamental and irreversible. They point to the radical shifts in the occupational structures and the huge impact of information and knowledge on economic development. To them the knowledge society is already a reality. Others, however, express themselves more cautiously. Habermas (1981), Giddens (1991, 2000) or Beck (1986, 1997) highlighted the importance of reflexivity in the process of societal change. For the latter, the age of modernity has not yet come to an end. It will be continued, but in a modified form. Instead of controlling nature, as was the case in the early periods of modernity, societies in late modernity to a much greater extent are forced to control or to repair the unintended consequences resulting from a complex and unforeseeable socio-economic and technological development. Control and repair to a high degree depend on detailed information and profound knowledge.

In other words the concept of knowledge society is still discussed, and scholarly expertise has not reached consensus on this topic. Frank Webster (2006) underlines that "the shift to a new society, an information society, is mistaken" - in spite of the pervasive impact of information and communication technologies on economy, culture and social practice. For the Danish scholar Steen Wackerhausen (2008) knowledge society doesn't characterize an entire society. Instead, the term represents heterogeneous aspects and different challenges and risks in a globalized world.

Cultures of Knowledge

As we have seen above, the concepts of information and knowledge are of enormous importance for human activities and social systems in late modernity. At the same time, it has been argued that it can be misleading to assert that a new type of society already exists. One way of overcoming this dilemma could be found in the concept of cultures of knowledge. It originates from sociology of knowledge and describes patterns and conventions, which are found in practices of knowledge experts and symbol analysts. Knorr-Cetina defines cultures of knowledge as cultures of specific knowledge contexts or knowledge milieus "die, gebunden durch Verwandtschaft, Notwendigkeit und historische Koinzidenz, in einem Wissensgebiet bestimmen, wie wir wissen, was wir wissen. Wissenskulturen generieren und validieren Wissen." (Knorr-Cetina 2002, p.11)

The concept cultures of knowledge is particularly useful for two reasons. Firstly, it is an open concept. Usually, the institutionalization of knowledge production in universities for example, or the professionalization of knowledge experts are considered as important analytical approaches.

However, cultures of knowledge underscore other important aspects, too. It is locally and culturally embedded activities and practices in relevant knowledge domains that effectively support processes of sense-making. Especially the focus on local contexts makes it possible to explore homologous activities and practices in different institutions on the one hand and heterologous activities in identical cultures on the other hand.

Secondly, Knorr-Cetina defines the action-theoretical frame of the concept accordingly wide. A valid practice in a specific knowledge domain results not only from the intentions and interventions of the respective actors, but has to be understood as a collective activity or an epistemic machinery likewise. In other words, we are dealing with an object-oriented and subject-oriented concept. Epistemic machineries are subject-oriented, as soon as relevant actors are involved in chains of collective activities. But objects play a crucial role as well. Physical and symbolic tools have a decisive impact on the sequences of activities and on individual behavior of the actors. They serve either as a kind of road map or function as cognitive trails when coordinating the activities in different cultures of knowledge.

After these introductory remarks, we will describe and classify different cultures of knowledge by the means of the cultural-historical activity theory. We focus on the question how new knowledge can be examined, acquired and conveyed in complex, unstable and dynamic societies. To begin with, we give a brief overview of the cultural-historical activity theory.

Cultural-historical Activity Theory

Let us begin this chapter with a few brief comments about the cultural-historical activity theory (CHAT) - a theory that has developed in recent decades to a spacious building, in which many scientific disciplines have settled. We point out two aspects of importance for the purpose of the article.

Activity, a key concept of CHAT is closely associated with a specific approach to social transformations. "This traditional dualistic framework does not help us to understand today's deep social transformations. More than ever before,

there is a need for an approach that can dialectically link the individual and the social structure." (Engeström 1999, p. 19) In contrast to social change, the term 'transformation' reveals the suddenness, intensity and totality of history. Within CHAT transformation processes can only be analyzed satisfactory if alterations of the structural relations of institutions and groups are considered as well as shifts in individual consciousness and behavior.

Activity unfolds as actions, embedded in specific social and cultural spaces and carried out by individual or collective subjects (Lektorsky 1999, 2009). Activity is both structured and has a structuring function. The social formation of individual activities is conceived as a process of internalization. When dealing with forward-looking actions, creativity is the driving force of social development. Creativity can be defined as an act of externalization. Internalization and externalization, however, are dialectically interrelated. Engeström emphasizes that the dialectical structure of human activity helps to overcome the divide "between the Cartesian individual and the untouchable societal structure. The individual could no longer be understood without his or her cultural means, and the society could no longer be understood without the agency of individuals who use and produce artifacts" (Engeström, 2001, p. 134).

Related to the aim of the article, we try to analyze the transition of industrial society to a knowledge society as multi-layered and multi-voiced process. Because CHAT mainly is understood as an object-oriented theory, we first and foremost deal with the nature of objects in general, and knowledge objects in particular.

The second point is related to some methodological issues. Sannino and others (2009) have pointed out that in CHAT activity is the only significant source and medium of knowledge. But activity is more than practical operations, based on strategic and utilitarian calculations. Knowledge, scientific knowledge included, has an emancipatory impact as well. On one hand activity is interpreted as direct involvement of social subjects into existing activity systems. On the other hand the limitations of daily activities can be overcome if and only if it is possible to develop useful theoretical concepts beyond situational constraints. Knowledge is target-oriented. However, its transformative potential unfolds only when the structural conditions of individual actions are experienced as limitation for further activity.

This raises the questions: How can new knowledge and better theory be produced? and What methods are useful for this purpose? Expanding the scope of existing knowledge does not create new knowledge. New knowledge can only be produced, as Engeström puts it, within a dynamic process that leads away from old knowledge. CHAT uses a special methodology for this purpose: Intervention scenarios. By interventions in daily practice, the actual limitations of knowledge can be experienced and the emergence of new knowledge can be supported. Boundary-crossing and emergent understanding (Scardamalia & Bereiter 2006) belongs to the methodological tools of CHAT.

Holzkamp (1995, p. 183) deduces the need for theory-based practice from the persistence of unresolved problems, Engeström from the "inherent contradictions, many disturbances and dilemmas" of social reality (2008 p. 258). Both of them regard decentering, changing one`s point of view and boundary-spanning as appropriate learning strategies (Engeström, 2001, p. 140). It is stressed that activities can be analyzed in many ways. CHAT should therefore apply interdisciplinary methods. It is also emphasized that the transformation of activity systems can only be understood from a historical perspective. Intervention, interdisciplinarity and historicity determine the methodological framework of expansive learning in activity systems.

In the following, we will mainly focus on the development of CHAT by Yrjö Engeström, who understands himself as representative of the third generation of CHAT. In recent decades he has refined some of the basic ideas of the theoretical concept, mainly in the field of workplace and organizational learning. By making notions like "multi-voicedness, run-away-objects, collaborative intentionality and radical exploration" fertile for further theoretical and practical reflections, Engeström has contributed strongly to the development of CHAT. A more detailed overview of the Activity Theory can be found in Lompscher (2006); a discussion of recent theoretical and practical problems in the anthology "Learning and Expanding with Activity Theory" (2009).

Knowledge and run-away objects

Our initial hypothesis was that information and knowledge are the key resources in postindustrial societies that have led to a corresponding differentiation in the division of labor. Accordingly, practical and tool-based activity patterns have become less important; symbolic and conceptual tools have become more important. The importance of symbolic resources, expert systems, and specific knowledge-cultures has been emphasized in the relevant studies. If we define knowledge as activity, rather than as form or content, the concept of the knowledge society

is too abstract to capture the dynamics of social transformation related to knowledge production, distribution and organization. Vice versa, knowledge and society are too complex and too contradictory concepts to be represented through the single term knowledge society. If knowledge society instead is understood as a variety of various knowledge cultures, such as Knorr-Cetina suggests (2002), then knowledge could be examined with reference to the diversity of existing knowledge activities.

In CHAT symbolic and representational actions, mediated objects and cultural structures as well as societal and individual behavior are related to each other directly. CHAT directs, as we said before, the analytical gaze primarily on the object-subject axis. Objects are an integral part of any activity. They are anticipated, encountered and constructed within activity systems. Objects reflect experiences and comprise drafts for the future. As Engeström and others illustrated by reference to Knorr-Cetina (Engeström et al. 2003; p.152), objects have the function to be the intersection of different knowledge regimes and cultures of knowledge. Interaction and communication rules as well are emerging in the interplay with objects.

It is therefore obvious to depict some of the ontological assumptions that are presupposed in CHAT. Of particular interest are those properties of the post-industrial era, which CHAT attributes to objects for analytical reasons. How ephemeral or constant are objects in a world of change? How stable are social, cultural and ideological structures, in which objects are embedded and where they achieve significance? Engeström has dealt repeatedly with these questions. He points out that social and cultural structures have become more volatile and that objects are extended in space and time. Engeström refers particularly to the growth of ambivalence (Bauman 2000), of uncertainty and risk (Beck), and the multiplication of perspectives and the increase in complexity. Emergent objects require new activity systems and innovative knowledge tools. Thus, the term "runaway-object" becomes central in his analytical and theoretical efforts.

In accordance with the methodology of CHAT, social changes and cultural developments are described and analyzed on a meso-level. This level is the middle ground compared to entire societies and individual behavior and interaction. Engeström adopts, for example, the concept runaway world, elaborated by Giddens (2000), and incorporates it in the terminology of CHAT. Runaway objects have, among other things, the ability "to escalate and expand up to a global scale of influence. They are objects that are only weakly under anybody's control and have far-reaching, unexpected side effects." (Engeström 2006; p. 10) They are difficult or impossible to control. The runaway-potential, which might be translated as critical mass, is hard to estimate and predict. Engeström uses as examples quite different phenomena, such as diabetes and the Linux platform. In the cases cited, the critical and innovative potential could neither be predicted beforehand nor could its vigor and intensity be determined. The runaway-potential is spotted often only in cultural crisis or periods and processes of social transformation.

The instability of objects is operationalized using three categories. First, he discusses the question of whether objects are compressed or extended in space and time. Second, he deals with the question: Who acts in activity systems? Thirdly, there is the phenomenon of distributed agency. Finally, he is concerned with the linking of different expert systems, the specialization in knowledge cultures and with boundary-crossing.

Engeström develops the idea of spatial and temporal expansion of objects by delineating it from Lave and Wenger's concept of communities of practice on the one hand and from theories of postmodernism on the other hand (Engeström 2007a). Community of practice is rejected, because a very specific form of communion was elevated to a prototype of social production of knowledge - a form, which, according to Engeström, fits into the 19th and not into the 21st century. It is especially criticized that authority structures, process structures and learning processes do not harmonize with the culture of knowledge in post-industrial societies.

In regard to theories of postmodernism, Engeström argues that the technological aspects of communication and transportation are being overestimated. As a result, objects, upon which those technologies act, are considered as analytically insignificant. It is underlined that the historical transformation of objects is better understood by the notion of expansion than by that of compression. In his writings Engeström shows how the expansion of objects enforces new forms of cooperation, the knotworking phenomenon, and how specific cultures of knowledge arise in the interaction between expanded objects and distributed agency.

His example from the battle against economic crime highlights impressively how in other regards isolated activity systems become interconnected and how boundary-crossing turns out to be an indispensable tool, when developing realistic forms of activity at the borders of highly specialized expert systems. New knowledge is produced jointly, namely in organizational structures

which "typically does not have strictly defined criteria for membership, but it members can be identified by their activism." (Engeström 2008; p. 229).

The co-configuration of knowledge presupposes a dialogical and self-reflexive culture of knowledge. Co-configuration can be seen as the last stage in the historical development of industrial work. The first stage is craft production and here tacit knowledge is the dominant form of knowing. The next stages are mass-production, process-enhancement and mass-customization. In stage of co-configuration, knowledge is negotiated knowledge, produced in processes of expansive learning. "The creation mastery, and maintenance of such expanded objects is a demanding and contradictory challenge to the parties involved. Expanded objects require and generate, and are constructed by means of, novel mediating instrumentalities "(Engeström et al. 2003; p.154).

In the next section we will have a look on new ways of learning and the co-configuration of knowledge.

Expansive Learning and Knowledge Exploration

In many publications Engeström has addressed questions of learning, namely forms of collaborative learning in activity-systems. Already in the late eighties he was convinced, that it could no longer be taken for granted that knowledge, competencies and skills could be defined in advance (Engeström 1986). In a seminal article from 2001 he summarized the state of theory development in five principles (Engeström 2001) in order to outline the challenges for CHAT for the following decade. As a consequence, the concept of "expansive learning" was given a new direction. "People and organizations are all the time learning something that is not stable, not even defined or understood ahead of time" (Engeström 2001; p. 137). Authoritative ways of conveying knowledge belong to the past. The learning challenge consists primarily in the exploration of non-knowledge. Not-knowing is the crucial object, which expansive learning is dealing with.

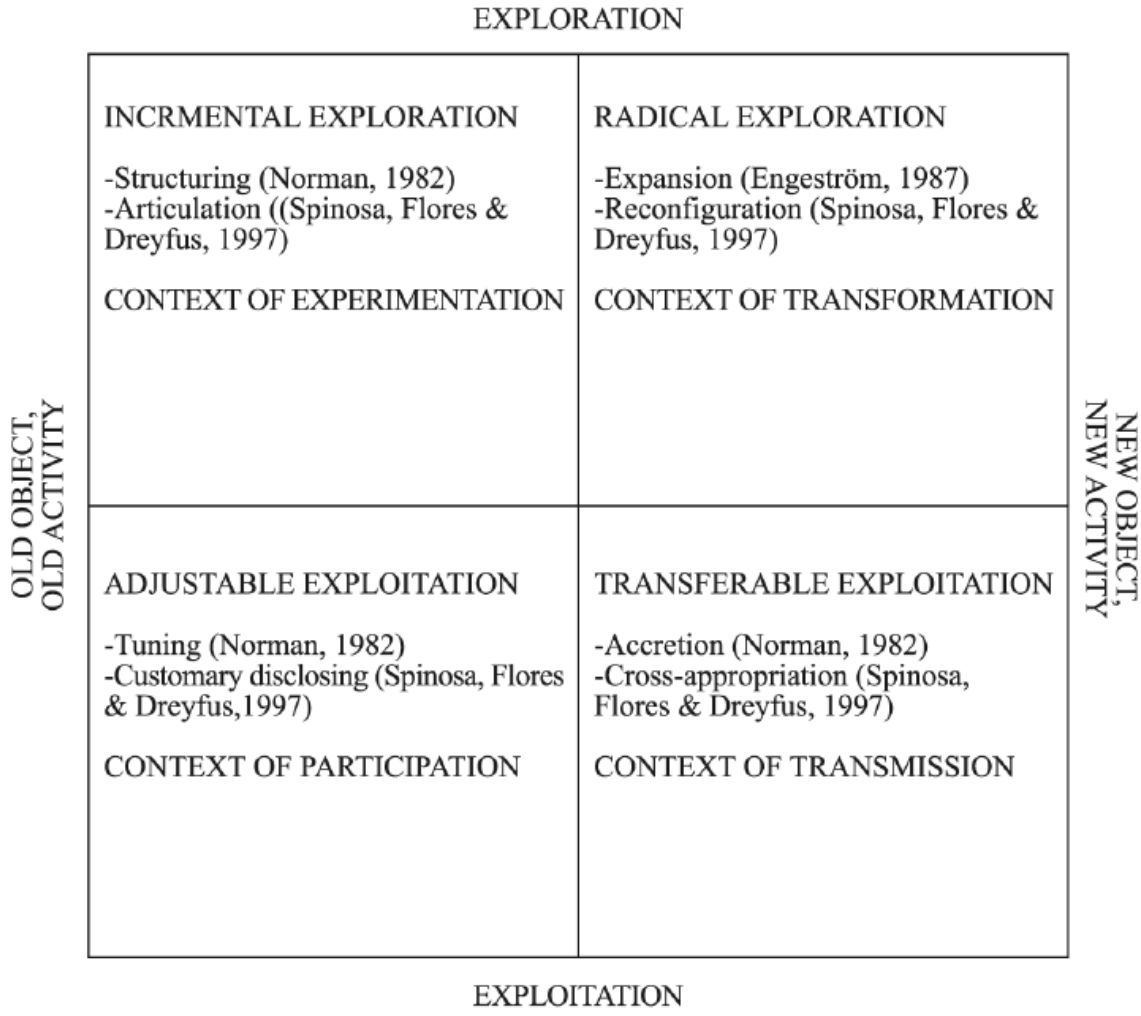
How should the process of learning be organized, which have nescience (not-knowing) as starting-point, where knowledge and skills only can be acquired within the process of exploration and where competent teachers are lacking? These questions have largely determined the research activities of the third generation of activity theory. We want to address two crucial considerations which a) explain the concept of expansive learning in open learning environments and b) describe the diversity of knowledge cultures in an ideal typical manner.

In the context of CHAT knowledge can best be understood when it is depicted as applied knowledge or as knowledge as activity. It is not formal properties, but the cognitive and learning-conducive potentials of knowledge that are of interest in the exploration of runaway-objects. Instead of classifying knowledge formally as tacit and explicit knowledge or scientific, moral and religious knowledge, Engeström differentiates between stabilization knowledge and possibility knowledge.

Stabilization knowledge has the function to simplify a complex reality, to typify it and, so to speak, to make reality conceptually conceivable. Redundancy is a predominant criterion when reducing complexity. Possibility knowledge on the other hand is knowledge, which destabilizes experiences and habitual procedures. In this context, knowledge is seen as a development space, it opens up new possibilities in activities and insights."In this sense, possibility knowledge is agentive knowledge, the instrumentality of agency at work." (Engeström 2007b; p. 271)

This differentiation is essential in theoretical universe of CHAT. Different domains of knowledge and learning cultures can be depicted. Stabilization knowledge can be equated with the usage and application of verified knowledge. Possibility knowledge can be equated with exploring new and not-codified knowledge. If one relates this distinction to various object domains, it can be differentiated between known and tested objects and established processes on the one hand and new, unknown and uncertain objects and processes on the other hand.

With the help of this classification, a matrix consisting of four knowledge contexts was designed. Those contexts differ on the degree of novelty of knowledge and on the methods used to achieve knowledge. He differentiates between exploration and exploitation. "Radical exploration" and "incremental exploration" are forms of innovative learning, with focus on comprehensive and progressive reconfiguration of activity systems. "Adaptive exploitation" and "transferable exploitation" are forms of knowledge transfer, which will contribute either to the stabilization of activity systems or to the improvement their effectiveness. The analytic distinction between different cultures of knowledge allows us to leave a quantitative, especially economic understanding of the knowledge society. In CHAT a quantitative view can easily be replaced by a socio-cultural understanding. From a socio-cultural perspective it is possible to distinguish between knowledge contexts, in which conventional knowledge is imparted and those contexts, in which new knowledge is gained by means of exploratory-innovative methods.



Engeström makes a sharp difference not only between specific cultures of knowledge and ways of learning, but he also tries to show how knowledge and expansive learning has to be organized in the future. Above all he is interested in organizational forms, which support transformation processes in activity systems. In a series of articles between 1999 and 2008, the idea of co-configuration of knowledge is further developed and the concept of collaborated knotworking and the mycorrhiza-formation is deepened. The basic idea can be summarized in the following proposition: when objects have become unstable and organizations have become fluid and human agency has been multiplied, it is important to invent and establish organizational forms that are as flexible and varied as the institutional fields are complex.

In contrast to the concept of network Engeström uses that of knotworking. Knotworking refers to not-fixed forms of cooperation. There are no predetermined and elaborated rules. Not even an identifiable decision-making-center can be found. "Knotworking is characterized by a movement of tying, untying, and retying together seemingly separate threads of activity." (2000, p. 532; 2005; 2008) Sensemaking processes, reflective communication and dialogism belong as well to knotworking. Knotworking-processes must be interpreted and analyzed as an integral part of the transformation in history. Knots are unlike nets unstable units.

To complete the picture of the unstable, hybrid and borderless organizations Engeström draws on the metaphor of the mycorrhiza. Mycorrhiza is a fungus and mycorrhiza-formation is a symbiotic community made up of a fungus and a plant. Since both depend on each other, mutual reproductive structures are emerging. This metaphor highlights two important aspects crucial for the understanding of latent and hybrid organizations.

New knowledge and new meaning emerge in the continuous and decentralized interaction and communication between otherwise independent institutional actors or entities. Radical exploration or expansive learning is an interdisciplinary approach, which seeks to investigate the com-

plexity of run-away-objects not from separate perspectives. Isolated exploration will only result in incomplete knowledge. If one wants to understand the structures of producing and distributing knowledge, this can be achieved only if one is aware, that cultures of knowledge are linked and that they interact in mutual reproductive processes.

Conclusion

The third generation of CHAT primarily has dealt with the changing structures of knowledge in post-industrial societies. The fugitive nature of symbolic and material objects inevitably enforces informal structures in which new knowledge can be explored and created. Creating new knowledge emerges in dialogical, networked and boundary-spanning processes. Run-away-objects reflect the complexity of current social developments as well as the limitations of our cognitive means. In CHAT history is considered as a critical process, which probably ends negative or even devastating, if our means of knowledge prove to be inadequate.

To Engeström, therefore, the expansive and radical exploration of not-knowing (nescience) turns out to be the decisive criterion when it comes to the zone of proximal development for activity systems (1986). In our article we have referred to two key terms – terms, which help to understand the transformation of post-industrial society analytically. The first one is the concept cultures of knowledge. Cultures of knowledge can be understood as specific symbolic configurations. According to Engeström those cultures differ primarily by the degree of how intensively new knowledge is explored. The most progressive culture of knowledge has been classified as a culture of radical exploration; the most conservative one is that of adaptive exploitation. In hyper-complex societies only a culture of radical exploration can ensure sustainable development and social transformation.

Collaborated knotworking was the second term. By that we mean organizational processes that initiate a dialogue between people and /or systems which are not formally linked, but are mutual interdependent because of their activities and actions. Collaborated knotworking provides important conditions to ensure that collective intentionality and linked actions in activity systems may emerge. It is a process of co-configuration, in which there is no sole and fixed center of authority.

ПРИМЕЧАНИЯ

1. Radical exploration occurs in contexts, where activity systems are being developed and transformed. The antithesis of transformation is exploitation or participation. By this we mean that neither the knowledge nor the activity is innovative. The knowledge, brought into play, is known and tested. Knowledge-sharing and training of individual skills are activities, which consolidate only existing social and cultural processes in stable activity systems. Engeström distinguishes additionally between "transferable exploitation" and "incremental exploration". The first term describes how known knowledge is used in new processes. The latter term describes how the stepwise exploration of new knowledge takes place in well-established processes.

ЛИТЕРАТУРА

1. Bauman, Z. (2000) Fluid Modernity. Cambridge: Polity Press
2. Beck, U. (1986) Risikogesellschaft. Auf dem Weg in eine andere Moderne. Frankfurt/Main: Suhrkamp
3. Beck, U. (1997) Was ist Globalisierung? Frankfurt/Main: Suhrkamp
4. Bell, D. (1973) The Coming of Post-Industrial Society. A Venture in Social Forecasting. New York: Basic Books
5. Castoriadis, C. (1990) Gesellschaft als imaginäre Institution. Entwurf einer politischen Philosophie. Frankfurt/Main: Suhrkamp Taschenbuch
6. Drucker, P. (1993) Post-capitalist Society. Oxford: Butterworth-Heinemann
7. Engeström, Y. (1986) The Zone of Proximal Development as the Basic Category of Educational Psychology. In: The Quarterly Newsletter of the Laboratory of Comparative Human Cognition. Vol. 8/1: 23-42
8. Engeström, Y. (1999) Activity theory and individual and social transformation. In: Engeström, Y. et al. (ed.) Perspectives on activity theory. Cambridge: Cambridge University Press
9. Engeström, Y. (2000) Can People Learn to Master their Future? In: The Journal of the Learning Science 9/4; 525-534
10. Engeström, Y. (2001) Expansive Learning at Work: toward an activity theoretical reconceptualization. In: Journal of Education and Work 14/1; 133 – 157
11. Engeström, Y. (2004) New Forms of Learning in Co-configuration Work. In: Journal of Workplace Learning 16/1+2; 11-21

12. Engeström, Y. (2005) Knotworking to Create Collaborative Intentionality Capital in Fluid Organizational Fields. In: Advances in Interdisciplinary Studies of Work Teams Vol. 11; 307 - 336.

13. Engeström, Y. (2006) Development, Movement and Agency: Breaking Away Into Mycorrhizae Activities. In: Yamazumi, K. (ed.) Building activity theory in practice: Toward the next generation. Osaka: Center for Human Activity Theory, Kansai University (CHAT Technical Report 1). http://lchc.ucsd.edu/mca/Mail/xmcamail.2008_12.dir/att-0247/Yrjo.dev.pdf.

14. Engeström, Y. (2007a) From Community of Practice to mycorrhizae. In: Hughes, J. et al. (ed.) Communities of practice: Critical perspectives. London: Routledge

15. Engeström, Y. (2007b) From Stabilization Knowledge to Possibility Knowledge in Organizational Learning. In: Management Learning 38/3; 271- 275

16. Engeström, Y. (2008) From Teams to Knots. Activity-Theoretical Studies of Collaboration and Learning at Work. Cambridge: Cambridge University Press

17. Engeström, Y. et al. (2003) Spatial and Temporal Expansion of the Object as a Challenge for Reorganizing Work. In: Nicolini, D. et al. (ed.) Knowing in organizations: A practice-based approach. Armonk: M.E. Sharpe

18. Giddens, A. (1991) Consequences of Modernity. Cambridge: Polity Press

19. Giddens, A. (2000) Runaway world: How globalization is reshaping our lives. London: Brunner-Routledge.

20. Habermas, J. (1981) Theorie des kommunikativen Handelns. Frankfurt/Main: Suhrkamp Verlag

21. Holzkamp, K. (1995) Lernen. Subjektwissenschaftliche Grundlegung. Frankfurt/Main: Campus Verlag

22. Knorr-Cetina, K. (2002) Wissenskulturen. Ein Vergleich naturwissenschaftlicher Wissensformen. Frankfurt/Main: Suhrkamp Verlag

23. Lektorsky, V.A. (1999) Activity Theory in a new era. In: Engeström, Y. et al. (ed.) Perspectives on activity theory. Cambridge: Cambridge University Press

24. Lektorsky, V.A. (2009) Mediation as a Means of Collective Activity. In: Sannino, A. et al.(ed.) Learning and Expanding with Activity Theory.Cambridge: Cambridge University Press; 75 - 87

25. Lompscher, J. (2006) The Cultural-Historical Activity Theory: Some Aspects of Development. In: Sawchuk, P.H. et al. (ed.) Critical Perspectives on Activity. Explorations Across Education, Work and Everyday Life. Cambridge: Cambridge University Press; 35 - 51

26. Sannino, A. et al. (2009) Activity Theory between Historical Engagement and Future-Making Practice. In: Sannino, A. et al. (ed.) Learning and Expanding with Activity Theory. Cambridge: Cambridge University Press

27. Scardamalia, M. & Bereiter, C. (2006) Knowledge Building: Theory, pedagogy and technology. In: Sawyer, K. (ed.) Cambrdige Handbook of the Learning Sciences. New York: Cambridge University Press

28. Stehr, N. (1994) Knowledge Societies. London: Sage

29. Touraine, A. (1972) Die postindustrielle Gesellschaft. Frankfurt/Main: Suhrkamp Verlag

30. Wackerhausen, S. (2008) Videnssamfundet og dets fordringer – nogle essayistiske kommentarer. In: Slagmark - Tidsskrift for idéhistorie; nr. 52: 51-65

31. Webster, F. (2006) The Information Society Revisited. In: Lievrouw, L.A. & S. Livingstone (ed.) Handbook of New Media. London: Sage; 443 - 457